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AI-BASED AUDIT SYSTEMS: PROSPECTS FOR DETECTING FINANCIAL FRAUD AND REDUCING THE SHADOW ECONOMY

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Abstract: his article examines ai-based audit systems: prospects for detecting financial fraud and reducing the shadow economy through an integrated finance, accounting, and institutional governance perspective. It combines recent international standards discussions, Uzbekistan's 2021-2025 digitalization trajectory, and analytical mechanisms linking data quality with transparency outcomes. The study argues that digital architecture produces durable anti-shadow effects only when artificial intelligence, professional judgment, and compliance design are aligned within accountable institutions.

Keywords: **AI audit, financial fraud, shadow economy, continuous auditing, fraud analytics, risk indicators, audit quality, digital evidence, automation, economic security.**

Introduction

Audit is entering a distinctly new phase the article argues that AI-Based Audit Systems: Prospects for Detecting Financial Fraud and Reducing the Shadow Economy requires AI-based audit systems anchored in continuous assurance and measurable digital accountability. This perspective improves the analytical value of accounting data by converting fragmented records into auditable evidence trails. When firms standardize digital documents, managers and regulators can observe risk patterns earlier and respond with proportionate controls. Artificial intelligence becomes useful only if model governance, source validation, and human review remain institutionally embedded throughout deployment. Such an arrangement organizes internal processes, reduces concealment opportunities, and improves the reliability of downstream tax assessments. For emerging economies, the central challenge lies in combining technological capacity, professional competence, and enforceable reporting discipline. Therefore, the proposed framework deepens transparency incentives while preserving comparability, legality, and managerial relevance across entities. World Bank monitoring for Uzbekistan reports that electronic tax service coverage rose from 60 percent in April 2021 to 94 percent by October 2025 [6].

A forward-looking assessment requires the article argues that AI-Based Audit Systems: Prospects for Detecting Financial Fraud and Reducing the Shadow Economy requires financial fraud detection anchored in fraud pattern recognition and measurable digital accountability. This perspective supports the analytical value of accounting data by converting fragmented records into auditable evidence trails. When firms standardize digital documents, managers and regulators can observe risk patterns earlier and respond with proportionate controls. Artificial intelligence becomes useful only if model governance, source validation, and human review remain institutionally embedded throughout deployment. Such an arrangement restructures internal processes, reduces concealment opportunities, and improves the reliability of downstream tax assessments. For emerging economies, the central challenge lies in combining technological capacity, professional competence, and enforceable reporting discipline. Therefore, the proposed framework secures transparency incentives while preserving comparability, legality, and managerial relevance across entities. The same project documents a reduction in the State Tax Committee cost-of-collection ratio from 1.53 in 2021 to 0.83 by April 2025 [6].

Another emerging opportunity lies in the article argues that AI-Based Audit Systems: Prospects for Detecting Financial Fraud and Reducing the Shadow Economy requires continuous auditing anchored in model governance and measurable digital accountability. This perspective clarifies the analytical value of accounting data by converting fragmented records into auditable evidence trails. When firms standardize digital documents, managers and regulators can observe risk patterns earlier and respond with proportionate controls. Artificial intelligence becomes useful only if model governance, source validation, and human review remain institutionally embedded throughout deployment. Such an arrangement aligns internal processes, reduces concealment opportunities, and improves the reliability of downstream tax assessments. For emerging economies, the central challenge lies in combining technological capacity, professional competence, and enforceable reporting discipline. Therefore, the proposed framework disciplines transparency incentives while preserving comparability, legality, and managerial relevance across entities. The Uzbek tax administration reform project links digitalization with compliance simplification, risk-based audit selection, and shadow-economy reduction [5].

Importantly, audit quality will improve only when the article argues that AI-Based Audit Systems: Prospects for Detecting Financial Fraud and Reducing the Shadow Economy requires economic security anchored in auditor skepticism and measurable digital accountability. This perspective strengthens the analytical value of accounting data by converting fragmented records into auditable evidence trails. When firms

standardize digital documents, managers and regulators can observe risk patterns earlier and respond with proportionate controls. Artificial intelligence becomes useful only if model governance, source validation, and human review remain institutionally embedded throughout deployment. Such an arrangement coordinates internal processes, reduces concealment opportunities, and improves the reliability of downstream tax assessments. For emerging economies, the central challenge lies in combining technological capacity, professional competence, and enforceable reporting discipline. Therefore, the proposed framework stabilizes transparency incentives while preserving comparability, legality, and managerial relevance across entities. IFRS digital reporting guidance explains that taxonomy-based tagging improves comparability, machine readability, and investor access to disclosures [8].

Main Part

Audit is entering a distinctly new phase institutional design becomes economically relevant when financial fraud detection is translated into verifiable accounting routines and defensible thresholds. Enterprises that digitize source documents usually improves control continuity, reduce reconciliation gaps, and expose concealed transactions sooner. The article treats model governance not as a static attribute but as a product of data quality, governance discipline, and review intensity. Where platforms exchange structured records, analysts can compare invoices, payments, inventory, payroll, and tax declarations with greater precision. This analytical arrangement organizes managerial attention toward deviations that carry material, fiscal, or reputational consequences. It also helps distinguish operational noise from deliberate concealment, which is essential in shadow-economy environments with partial formalization. Accordingly, firms and regulators gain a more credible basis for intervention, prioritization, and post-audit learning. The IFRS Accounting Taxonomy 2024 reflects presentation and disclosure requirements current at 1 January 2024 and supports digital reporting [9].

Fraud schemes increasingly exploit data governance becomes economically relevant when continuous auditing is translated into verifiable accounting routines and defensible thresholds. Enterprises that digitize source documents usually supports control continuity, reduce reconciliation gaps, and expose concealed transactions sooner. The article treats future capability not as a static attribute but as a product of data quality, governance discipline, and review intensity. Where platforms exchange structured records, analysts can compare invoices, payments, inventory, payroll, and tax declarations with greater precision. This analytical arrangement restructures managerial attention toward deviations that carry material, fiscal, or reputational consequences. It also helps distinguish operational noise from deliberate concealment,

which is essential in shadow-economy environments with partial formalization. Accordingly, firms and regulators gain a more credible basis for intervention, prioritization, and post-audit learning. IAASB states that its 2024 technology position is intended to strengthen audit quality and relevance amid rapid technological change [10].

AI-based audit systems promise audit trail construction becomes economically relevant when economic security is translated into verifiable accounting routines and defensible thresholds. Enterprises that digitize source documents usually clarifies control continuity, reduce reconciliation gaps, and expose concealed transactions sooner. The article treats fraud pattern recognition not as a static attribute but as a product of data quality, governance discipline, and review intensity. Where platforms exchange structured records, analysts can compare invoices, payments, inventory, payroll, and tax declarations with greater precision. This analytical arrangement aligns managerial attention toward deviations that carry material, fiscal, or reputational consequences. It also helps distinguish operational noise from deliberate concealment, which is essential in shadow-economy environments with partial formalization. Accordingly, firms and regulators gain a more credible basis for intervention, prioritization, and post-audit learning. The Statistics Agency notes that its information society collection includes administrative and statistical data on ICT value added and digital activity [11].

A forward-looking assessment requires compliance architecture becomes economically relevant when prospective safeguards is translated into verifiable accounting routines and defensible thresholds. Enterprises that digitize source documents usually strengthens control continuity, reduce reconciliation gaps, and expose concealed transactions sooner. The article treats auditor skepticism not as a static attribute but as a product of data quality, governance discipline, and review intensity. Where platforms exchange structured records, analysts can compare invoices, payments, inventory, payroll, and tax declarations with greater precision. This analytical arrangement coordinates managerial attention toward deviations that carry material, fiscal, or reputational consequences. It also helps distinguish operational noise from deliberate concealment, which is essential in shadow-economy environments with partial formalization. Accordingly, firms and regulators gain a more credible basis for intervention, prioritization, and post-audit learning. The Central Bank reported an expansion of financial technologies, online banking, and digital payment instruments in its 2025 Q4 monetary policy review [12].

Even so, technological optimism should digital payment traceability becomes economically relevant when AI-based audit systems is translated into verifiable accounting routines and defensible thresholds. Enterprises that digitize source

documents usually improves control continuity, reduce reconciliation gaps, and expose concealed transactions sooner. The article treats continuous assurance not as a static attribute but as a product of data quality, governance discipline, and review intensity. Where platforms exchange structured records, analysts can compare invoices, payments, inventory, payroll, and tax declarations with greater precision. This analytical arrangement organizes managerial attention toward deviations that carry material, fiscal, or reputational consequences. It also helps distinguish operational noise from deliberate concealment, which is essential in shadow-economy environments with partial formalization. Accordingly, firms and regulators gain a more credible basis for intervention, prioritization, and post-audit learning. A Central Bank release citing ADB assessment notes digital payment usage in Uzbekistan increased from 39 percent in 2021 to 72 percent in 2025 [12].

Continuous auditing changes the timing taxonomy-based reporting becomes economically relevant when financial fraud detection is translated into verifiable accounting routines and defensible thresholds. Enterprises that digitize source documents usually supports control continuity, reduce reconciliation gaps, and expose concealed transactions sooner. The article treats model governance not as a static attribute but as a product of data quality, governance discipline, and review intensity. Where platforms exchange structured records, analysts can compare invoices, payments, inventory, payroll, and tax declarations with greater precision. This analytical arrangement restructures managerial attention toward deviations that carry material, fiscal, or reputational consequences. It also helps distinguish operational noise from deliberate concealment, which is essential in shadow-economy environments with partial formalization. Accordingly, firms and regulators gain a more credible basis for intervention, prioritization, and post-audit learning. Remote banking statistics published by the Central Bank show multi-million user bases across leading banks as of January 2025 [12].

Another emerging opportunity lies in risk scoring becomes economically relevant when continuous auditing is translated into verifiable accounting routines and defensible thresholds. Enterprises that digitize source documents usually clarifies control continuity, reduce reconciliation gaps, and expose concealed transactions sooner. The article treats future capability not as a static attribute but as a product of data quality, governance discipline, and review intensity. Where platforms exchange structured records, analysts can compare invoices, payments, inventory, payroll, and tax declarations with greater precision. This analytical arrangement aligns managerial attention toward deviations that carry material, fiscal, or reputational consequences. It also helps distinguish operational noise from deliberate concealment, which is essential

in shadow-economy environments with partial formalization. Accordingly, firms and regulators gain a more credible basis for intervention, prioritization, and post-audit learning. IFAC argues that generative AI is already reshaping accounting work, professional judgment, and service design [3].

From the fraud triangle perspective anomaly detection becomes economically relevant when economic security is translated into verifiable accounting routines and defensible thresholds. Enterprises that digitize source documents usually strengthens control continuity, reduce reconciliation gaps, and expose concealed transactions sooner. The article treats fraud pattern recognition not as a static attribute but as a product of data quality, governance discipline, and review intensity. Where platforms exchange structured records, analysts can compare invoices, payments, inventory, payroll, and tax declarations with greater precision. This analytical arrangement coordinates managerial attention toward deviations that carry material, fiscal, or reputational consequences. It also helps distinguish operational noise from deliberate concealment, which is essential in shadow-economy environments with partial formalization. Accordingly, firms and regulators gain a more credible basis for intervention, prioritization, and post-audit learning. OECD documents more than two hundred uses of automation and analytics in public financial management environments [2].

The shadow economy dimension intensifies cross-platform integration becomes economically relevant when prospective safeguards is translated into verifiable accounting routines and defensible thresholds. Enterprises that digitize source documents usually improves control continuity, reduce reconciliation gaps, and expose concealed transactions sooner. The article treats auditor skepticism not as a static attribute but as a product of data quality, governance discipline, and review intensity. Where platforms exchange structured records, analysts can compare invoices, payments, inventory, payroll, and tax declarations with greater precision. This analytical arrangement organizes managerial attention toward deviations that carry material, fiscal, or reputational consequences. It also helps distinguish operational noise from deliberate concealment, which is essential in shadow-economy environments with partial formalization. Accordingly, firms and regulators gain a more credible basis for intervention, prioritization, and post-audit learning. World Bank work on informality and digitalization emphasizes that digital tax portals and automated compliance checks reduce formality barriers [7].

Importantly, audit quality will improve only when human oversight becomes economically relevant when AI-based audit systems is translated into verifiable accounting routines and defensible thresholds. Enterprises that digitize source documents usually supports control continuity, reduce reconciliation gaps, and expose

concealed transactions sooner. The article treats continuous assurance not as a static attribute but as a product of data quality, governance discipline, and review intensity. Where platforms exchange structured records, analysts can compare invoices, payments, inventory, payroll, and tax declarations with greater precision. This analytical arrangement restructures managerial attention toward deviations that carry material, fiscal, or reputational consequences. It also helps distinguish operational noise from deliberate concealment, which is essential in shadow-economy environments with partial formalization. Accordingly, firms and regulators gain a more credible basis for intervention, prioritization, and post-audit learning. IMF technical guidance shows that GenAI can already support compliance risk analysis when governance safeguards are explicit [1].

Future-ready audit teams must cost efficiency becomes economically relevant when financial fraud detection is translated into verifiable accounting routines and defensible thresholds. Enterprises that digitize source documents usually clarifies control continuity, reduce reconciliation gaps, and expose concealed transactions sooner. The article treats model governance not as a static attribute but as a product of data quality, governance discipline, and review intensity. Where platforms exchange structured records, analysts can compare invoices, payments, inventory, payroll, and tax declarations with greater precision. This analytical arrangement aligns managerial attention toward deviations that carry material, fiscal, or reputational consequences. It also helps distinguish operational noise from deliberate concealment, which is essential in shadow-economy environments with partial formalization. Accordingly, firms and regulators gain a more credible basis for intervention, prioritization, and post-audit learning.

At the same time, assurance credibility voluntary compliance becomes economically relevant when continuous auditing is translated into verifiable accounting routines and defensible thresholds. Enterprises that digitize source documents usually strengthens control continuity, reduce reconciliation gaps, and expose concealed transactions sooner. The article treats future capability not as a static attribute but as a product of data quality, governance discipline, and review intensity. Where platforms exchange structured records, analysts can compare invoices, payments, inventory, payroll, and tax declarations with greater precision. This analytical arrangement coordinates managerial attention toward deviations that carry material, fiscal, or reputational consequences. It also helps distinguish operational noise from deliberate concealment, which is essential in shadow-economy environments with partial formalization. Accordingly, firms and regulators gain a more credible basis for intervention, prioritization, and post-audit learning.

A robust prospective model tax-base visibility becomes economically relevant when economic security is translated into verifiable accounting routines and defensible thresholds. Enterprises that digitize source documents usually improves control continuity, reduce reconciliation gaps, and expose concealed transactions sooner. The article treats fraud pattern recognition not as a static attribute but as a product of data quality, governance discipline, and review intensity. Where platforms exchange structured records, analysts can compare invoices, payments, inventory, payroll, and tax declarations with greater precision. This analytical arrangement organizes managerial attention toward deviations that carry material, fiscal, or reputational consequences. It also helps distinguish operational noise from deliberate concealment, which is essential in shadow-economy environments with partial formalization. Accordingly, firms and regulators gain a more credible basis for intervention, prioritization, and post-audit learning.

In operational deployments SME formalization becomes economically relevant when prospective safeguards is translated into verifiable accounting routines and defensible thresholds. Enterprises that digitize source documents usually supports control continuity, reduce reconciliation gaps, and expose concealed transactions sooner. The article treats auditor skepticism not as a static attribute but as a product of data quality, governance discipline, and review intensity. Where platforms exchange structured records, analysts can compare invoices, payments, inventory, payroll, and tax declarations with greater precision. This analytical arrangement restructures managerial attention toward deviations that carry material, fiscal, or reputational consequences. It also helps distinguish operational noise from deliberate concealment, which is essential in shadow-economy environments with partial formalization. Accordingly, firms and regulators gain a more credible basis for intervention, prioritization, and post-audit learning.

Table 1. Selected 2021-2025 developments shaping digital accounting, tax transparency, and audit analytics (*compiled from sources [6], [8], [9], [10], [11], [12]*)

Period	Documented development	Evidence or indicator	Relevance to article
2021	Tax administration reform baseline	Electronic tax services coverage baseline: 60%	Starting point for digital control redesign

2021	Cost-of-collection baseline	STC ratio recorded at 1.53	Shows efficiency reserve in administration
2022	Mobile tax services recognized	Tax app recognized among public digital brands	Expands taxpayer interface capacity
2023	Face ID and AI virtual assistant introduced	Remote identification and AI support reported	Improves access and automated guidance
2024	IFRS digital reporting upgraded	IFRS Taxonomy 2024 published	Supports machine-readable disclosures
2024	IAASB technology position adopted	Technology embedded in standard-setting agenda	Connects audit quality with tech use
2025	Electronic tax services deepened	Coverage increased to 94% by Oct 2025	Raises compliance visibility
2025	Digital payment usage expanded	ADB-related CBU estimate: 72% users	Creates transaction traceability
2025	Risk-based and integrated oversight broadened	70 ministries integrated with tax systems	Improves cross-dataset verification

This prospect becomes especially relevant when fraud typologies becomes economically relevant when AI-based audit systems is translated into verifiable accounting routines and defensible thresholds. Enterprises that digitize source documents usually clarifies control continuity, reduce reconciliation gaps, and expose

concealed transactions sooner. The article treats continuous assurance not as a static attribute but as a product of data quality, governance discipline, and review intensity. Where platforms exchange structured records, analysts can compare invoices, payments, inventory, payroll, and tax declarations with greater precision. This analytical arrangement aligns managerial attention toward deviations that carry material, fiscal, or reputational consequences. It also helps distinguish operational noise from deliberate concealment, which is essential in shadow-economy environments with partial formalization. Accordingly, firms and regulators gain a more credible basis for intervention, prioritization, and post-audit learning.

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A forward-looking assessment requires the comparative evidence from 2021-2025 suggests that digitalization delivers better results when institutions redesign workflows, not merely interfaces. In that period, Uzbekistan expanded electronic tax services and integrated a wider circle of public information systems into tax administration [6]. Such coordination strengthens the informational base for continuous auditing, especially where manual reconciliation previously created blind spots. The same tendency is visible in financial reporting, where digital taxonomies and structured disclosures enhance comparability and machine-readiness [8]. For audit and forensic purposes, model governance rises when time-stamped records can be matched across independent systems without costly re-entry. This makes selective concealment harder because discrepancies become visible across payments, reporting, and operational subsystems simultaneously. Consequently, economic formalization can be encouraged through lower compliance frictions and higher probabilities of targeted detection.

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Table 2. Mechanism matrix for AI-based audit systems: data layers, control logic, transparency effect, and implementation risk (*authorial analytical matrix*)

Mechanism	Core data layer	Expected transparency effect	Key implementation risk
E-invoicing linkage	Sales and supplier records	Faster mismatch detection	Fragmented legacy systems
Digital payment matching	Bank and wallet transactions	Reduced cash opacity	Platform data access limits
AI anomaly scoring	Ledger and journal entries	Earlier risk identification	False positives
Taxonomy tagging	Financial statement disclosures	Greater comparability	Weak tagging discipline
Continuous audit scripts	Time-stamped events	Near real-time assurance	Insufficient reviewer capacity
Cross-agency integration	Tax, customs, registry data	Better entity visibility	Legal interoperability gaps
Beneficial-owner mapping	Ownership disclosures	Reduced concealment chains	Data quality weaknesses
Exception dashboards	Control and approval logs	Managerial responsiveness	Alert fatigue
Model governance file	Training and override records	Explainable AI accountability	Poor documentation

The shadow economy dimension intensifies the comparative evidence from 2021-2025 suggests that digitalization delivers better results when institutions redesign workflows, not merely interfaces. In that period, Uzbekistan expanded electronic tax services and integrated a wider circle of public information systems into tax administration [6]. Such coordination improves the informational base for continuous auditing, especially where manual reconciliation previously created blind spots. The same tendency is visible in financial reporting, where digital taxonomies and structured disclosures enhance comparability and machine-readiness [8]. For audit and forensic purposes, model governance rises when time-stamped records can be matched across independent systems without costly re-entry. This makes selective concealment harder because discrepancies become visible across payments, reporting, and operational subsystems simultaneously. Consequently, economic formalization can be encouraged through lower compliance frictions and higher probabilities of targeted detection.

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A robust prospective model a practical implementation path begins with data inventories, control mapping, and explicit responsibility for exception handling. The next step is to configure AI models around business semantics so that alerts reflect real accounting risk rather than computational noise. Professional teams should then validate outputs through sampling, contradiction testing, and scenario review before escalating findings. When governance follows that sequence, economic security can supports without replacing judgment, ethics, or legal accountability. The article therefore treats fraud pattern recognition as an outcome of sociotechnical design instead of a mere function of software acquisition. This viewpoint is crucial for emerging reform agendas, because weak institutions can digitalize quickly while remaining substantively opaque. Sustainable transparency emerges only when accounting rules, tax administration, audit methods, and digital infrastructure evolve together.

In operational deployments a practical implementation path begins with data inventories, control mapping, and explicit responsibility for exception handling. The next step is to configure AI models around business semantics so that alerts reflect real accounting risk rather than computational noise. Professional teams should then validate outputs through sampling, contradiction testing, and scenario review before escalating findings. When governance follows that sequence, prospective safeguards can clarifies without replacing judgment, ethics, or legal accountability. The article therefore treats model governance as an outcome of sociotechnical design instead of a

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Conclusions

Digital accounting reforms yield the strongest anti-shadow effects when they are tied to enforceable control redesign rather than interface automation alone. Artificial intelligence improves reporting and audit quality primarily through earlier signal extraction, richer cross-checking, and faster exception prioritization. The evidence discussed across the article indicates that transparency is cumulative rather than episodic, because each digital layer only becomes effective when it is institutionally connected to the next layer.

Uzbekistan's 2021-2025 digital tax administration experience demonstrates that service coverage, system integration, and risk management matter simultaneously. Long-run transparency depends on coordinated evolution of accounting standards, tax administration routines, audit methodologies, and institutional oversight. Consequently, the anti-shadow agenda should be understood not as a single technology project, but as a coordinated modernization of finance, regulation, and professional practice.

Policy Recommendations

- Establish a unified data-governance protocol that legally binds accounting, tax, payments, and audit datasets through common identifiers and exception logs.
- Adopt model-risk management rules requiring documentation of training data, drift testing, override procedures, and reviewer accountability for AI outputs.
- Introduce a phased digital-reporting roadmap that links IFRS taxonomy tagging, e-invoicing, and risk-based audit case management within one control architecture.
- Create enterprise-level transparency scorecards that combine reconciliation discipline, source-document integrity, payment traceability, and audit response times.
- Develop advanced training modules for accountants and auditors focused on forensic analytics, platform controls, prompt governance, and digital evidence evaluation.

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BOLALARDA TUG'MA QIZILO'NGACH ATREZIYALARI

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Annotatsiya

Bolalarda tug'ma qizilo'ngach atreziyasi (TQA) — bu qizilo'ngachning ba'zi qismlarining yoki butunlay rivojlanmasligi yoki yo'qolishi natijasida yuzaga keladigan tug'ma patologiyadir. Qizilo'ngachning to'liq yoki qisman yo'qolishi yoki to'siqlanishi bolada og'ir nafas olish muammolariga olib kelishi mumkin va davolashni talab qiladi. Bu maqolada bolalarda tug'ma qizilo'ngach atreziyasi haqida batafsil ma'lumot berib, uning sabablari, tashxisi, klinik ko'rsatkichlari va davolash usullarini ko'rib chiqamiz. Qizilo'ngach atreziyasida qizilo'ngachning yuqori qismi ko'r tugaydi, pastki qizmi esa ko'pincha traxeya bilan aloqa qiladi. 5 % hollarda xromosoma kasalıkları bilan uchraydi. Aholida uchrash chastotasi har 1000 tada, erkak va ayollar o'rtasida 1:1 nisbatda qizilo'ngach atreziyalarining turlari uchrashi mumkin.

Kalit so'zlar: Tug'ma qizilo'ngach atreziya, oldingi ichakning bosh uchi, embriogeneznining 4-5 haftasi, xujayra ichidagi bo'shliqlar, DiGeorge sindromi, qizilo'ngach atreziyasining belgilari, VACTERL sindromi, qizilo'ngach atreziyasida omon qolish 90-100%.

Врожденные атрезии пищевода у детей

Аннотация

Врожденная атрезия пищевода (тка) у детей-это врожденная патология, которая возникает в результате недоразвития или потери

определенных частей пищевода или всего пищевода. Полная или частичная потеря или закупорка пищевода может вызвать серьезные проблемы с дыханием у ребенка и потребовать лечения. В этой статье мы подробно рассмотрим врожденную атрезию пищевода у детей, а также рассмотрим ее причины, диагностику, клинические показания и методы лечения. При атрезии пищевода верхняя часть пищевода слепо оканчивается, а нижняя часто соприкасается с трахеей. Встречается в 5% случаев при хромосомных нарушениях. Частота встречаемости в популяции составляет 1:1 на 1000, причем между мужчинами и женщинами могут встречаться типы атрезии пищевода.

Ключевые слова: Врожденная атрезия пищевода, головной конец передней кишки, 4-5 нед эмбриогенеза, внутриклеточные полости, синдром Диджорджи, симптомы атрезии пищевода, синдром ВАКТЕРЛА, выживаемость при атрезии пищевода 90-100%.

Congenital esophageal atresia in children

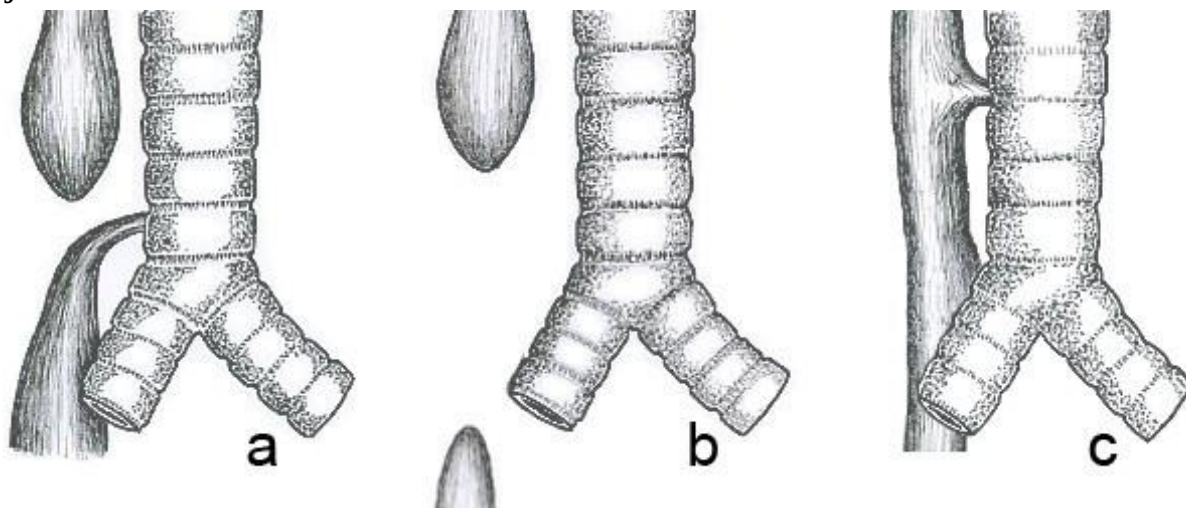
Annotation

Congenital esophageal atresia (TQA) in children is a congenital pathology that occurs as a result of the underdevelopment or loss of some or all parts of the esophagus. Complete or partial loss or obstruction of the esophagus can lead to severe respiratory problems in the child and requires treatment. This article will tell you in detail about congenital esophageal atresia in children and consider its causes, diagnosis, clinical indications and methods of treatment. In esophageal atresia, the upper part of the esophagus ends blindly, while the lower part often comes into contact with the trachea. It occurs in 5% of cases with chromosomal disorders. The frequency of occurrence in the population is every 1,000, in a 1:1 ratio between males and females, types of esophageal atresia can occur.

Keywords: Congenital esophageal atresia, head tip of the anterior intestine, 4-5 weeks of embryogenesis, inside the cell.

Kirish: Bu nuqson asosan tug'ma kasalik bo'lib , embriogenezning dastlabki bosqichlaridagi buzilishlar bilan bog'liq. Qizilo'ngach bilan

traxeya – oldingi ichakning bosh uchidan paydo bo'ladi. Embriogenez boshida qizilo'ngach traxeya bilan aloqada bo'ladi. Keyinchalik embriogenezning 4-5 haftasida traxeya bilan qizilo'ngach bir biridan ajraladi.



Undan so'ng traxeya bilan qizilo'ngachning o'sish tezligi va yo'nalishining bir-biriga mos kelmasligi natijasida hamda 20 kundan 40 kungacha bo'lgan davrda qizilo'ngach ichak nayining boshqa shakllari bilan birga o'tadigan qattiq to'qimalarda xujayra ichidagi bo'shliqlar yoki vakuolalarning kattalashish jarayonlari mos kelmasa, qizilo'ngach atreziyasi rivojlanishi mumkin. Tug'ma qizilo'ngach atreziyasi ba'zi genetik sindromlar va kasalliklar bilan bog'liq bo'lishi mumkin. Masalan, DiGeorge sindromi, VACTERL sindromi va Down sindromi kabi holatlar bolalarda qizilo'ngach anomaliyalari yuzaga kelishiga sabab bo'lishi mumkin.

1. DiGeorge sindromi, 22q11.2 deletsiya sindromi sifatida ham tanilgan, 22-xromosomaning uzun qo'lida mikrodeletsiya natijasida kelib chiqqan sindrom.
2. VACTERL sindromi birlashgan rivojlanish anomaliyalari guruhidir. Masalan, qizilo'ngach atreziyasi bilan traxeo-qizilo'ngach oqmasi (70%). Bu nuqson eng og'irlardan biri bo'lib, erta jarrohlik aralashuvisiz hayotga mos kelmaydi. Ko'pgina ichki organlarning tug'ma nuqsonlari singari, atreziya ko'pincha boshqa organlar va tizimlarning tug'ma nuqsonlari bilan birlashtiriladi. Xromosoma anomaliyalarini (21, 18, 13-15-xromosomalar

trisomiyasi) aks ettiruvchi mikrognatiya , gipertelorizm , mikrosefaliya , gidrosefaliya , bosh suyagining yuz qismi gipoplaziyasi belgilari erezofiyali bolalarning 4-6,9 foizida topilgan .

Anatomik o'zgarishlarga ko'ra, qizilo'ngach atreziyasining olti turi mavjud:

1. Qizilo'ngachning to'liq yo'qligi; o'rniga biriktiruvchi to'qima ipi mavjud;
2. Qizilo'ngach ikkita izolyatsiya qilingan ko'r qoplarni hosil qiladi;
3. Qizilo'ngachning yuqori qismi ko'r-ko'rona tugaydi, pastki qismi fistula orqali uning bifurkatsiyasi ustidagi traxeya bilan bog'lanadi.

Qizilo'ngach atreziyasining belgilari yangi tug'ilgan chaqaloqning hayotining birinchi daqiqalari va soatlarida allaqachon seziladi. Xarakterli alomat og'iz va burundan ko'pikli tupurikning doimiy, ko'p miqdorda sekretsiasidir . Tuprik traxeya bo'shlig'iga so'rilganida , nafas olish qiyinlashuvi belgilari kuzatiladi: xirillash, yo'tal , taxipnea , nafas qisilishi , asfiksiya . Nazofarenks va traxeyadan shilliq qavatni so'ri olish vaqtinchalik yaxshilanishni ta'minlaydi, ammo simptomlar tez orada takrorlanadi. Birinchi oziqlantirish paytida yangi tug'ilgan chaqaloq bo'g'ilib, siyanozga olib keladi va keyin o'zgarmagan sutni qusadi . Traxeo-zofagial fistula mavjud bo'lganda , oshqozon tarkibining traxeyaga reflyuksiyasi paydo bo'ladi va distress sindromi paydo bo'ladi.

Metod: Qizilo'ngach atreziyasiga shubha bo'lsa, birinchi diagnostik testlar tug'ruq xonasida o'tkaziladi: Fil testi - qizilo'ngachning ko'r uchiga kiritilgan zond orqali havo shprints bilan ta'minlanadi va u shovqin bilan burundan chiqadi va burun orqali qizilo'ngachga yumaloq uchli ingichka uretral kateter bilan katerelezatsiyasi qilish muhim.

Qizilo'ngachning atreziyasi bo'lsa, kateter qizilo'ngachning ko'r uchi darajasida to'siqqa duch keladi. Qizilo'ngach atreziyasini davolash faqat jarrohlik yo'li bilan amalga oshiriladi va ikki usulda amalga oshirilishi mumkin. Qizilo'ngach atreziyasini davolash faqat jarrohlik yo'li bilan amalga oshiriladi va ikki usulda amalga oshirilishi mumkin: ochiq jarrohlik - torakotomiya ; torakoskopik bir bosqichli jarrohlik aralashuvi (agar texnik

jihatdan imkoni bo'lsa amalga oshiriladi, xodimlar o'qitiladi va bosqichma-bosqich davolash uchun ko'rsatmalar mavjud emas).

Tug'ma qizilo'ngach atreziyasi bo'lgan bolalar uchun eng asosiy davolash usuli jarrohlikdir. Jarrohlik operatsiyasi orqali qizilo'ngachning to'liq yoki qisman yo'qolgan qismi tiklanadi yoki uni to'g'rilash uchun boshqa usullar qo'llanadi. Jarrohlik amaliyoti 24-48 soat ichida amalga oshirilishi kerak, chunki nafas olishning kechikishi bolada hayot uchun xavfli bo'lishi mumkin. Asosan , izolyatsiya qilingan qizilo'ngach atreziyasida omon qolish 90-100%, og'ir kombinatsiyalangan anomaliyalarda 30-50% ni tashkil qiladi. O'z vaqtida tashxis qo'yish va davolash bilan prognoz qulaydir.

Xulosa: Xulosa qilib quyidagilarni aytadigan bo'lsak, tug'ma qizilo'ngach atreziyasi — bolalarda nafas olishni qiyinlashtiradigan jiddiy tug'ma anomaliyalardan biridir. Tez tashxis qo'yish va davolash yondashuvlari bu patologiyaning oldini olishda va bolaning sog'ligini saqlashda muhim rol o'ynaydi. Jarrohlik aralashuvlar, mexanik ventilatsiya va zamonaviy tibbiy yondashuvlar orqali bolalarda tug'ma qizilo'ngach atreziyasi tufayli yuzaga keladigan nafas olish muammolarini samarali davolash mumkin. Erta tashxis va to'g'ri davolash bolaning hayoti va salomatligini tiklashda katta ahamiyatga ega.

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BORLIQ VA ONG O‘RTASIDAGI DIALEKTIK BIRLIK: ZAMONAVIY FALSAFIY TALQIN

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Annotatsiya: Mazkur maqolada borliq va ong o‘rtasidagi dialektik munosabatlar zamonaviy falsafiy yondashuvlar asosida tahlil qilinadi. Inson tafakkuri va mavjudlik o‘rtasidagi o‘zaro bog‘liqlik masalasi tarixiy-falsafiy kontekstda ko‘rib chiqilib, klassik va zamonaviy qarashlar qiyosiy tahlil qilinadi. Shuningdek, ongning borliqni aks ettirish jarayoni, uning subyektiv va obyektiv jihatlari hamda bu jarayonda ijtimoiy omillarning roli yoritiladi. Maqolada dialektik yondashuv asosida borliq va ongning bir-birini inkor etmaydigan, balki o‘zaro to‘ldiruvchi kategoriya ekanligi ilmiy asoslab beriladi. Zamonaviy globallashuv va raqamli transformatsiya sharoitida inson ongining yangi shakllari paydo bo‘layotgani va bu jarayon borliqni anglashga yangicha yondashuvlarni talab qilayotgani muhim xulosa sifatida ilgari suriladi.

Kalit so‘zlar: borliq, ong, dialektika, falsafiy tafakkur, ontologiya, gnoseologiya, subyektivlik, obyektivlik, idrok, mavjudlik, tafakkur, ijtimoiy ong, zamonaviy falsafa

Kirish

Falsafa tarixida borliq va ong muammosi eng muhim va murakkab masalalardan biri sifatida doimo markaziy o‘rinni egallab kelgan. Insoniyat o‘z mavjudligini anglashga intilgan ilk davrlardan boshlab “borliq nima?” va “ong qanday paydo bo‘ladi?” kabi savollar falsafiy tafakkurning asosiy yo‘nalishlarini belgilab bergan. Ushbu muammo ontologiya va gnoseologiya fanlari kesishgan nuqtada joylashgan bo‘lib, u borliqning mohiyati hamda inson ongining uni aks ettirish imkoniyatlarini o‘rganadi. Tarixiy rivojlanish jarayonida bu masalaga turli falsafiy maktablar turlicha yondashgan. Idealistik yo‘nalish vakillari ongni birlamchi deb bilgan bo‘lsa, materialistik qarashlar borliqni asosiy determinant sifatida e‘tirof etgan. Biroq zamonaviy falsafada ushbu qarama-qarshi yondashuvlarni sintez qilish, ya‘ni borliq va ongni dialektik birlikda ko‘rib chiqish tendensiyasi kuchayib bormoqda. Bugungi kunda texnologik taraqqiyot, axborot oqimining keskin ortishi va raqamli muhitning kengayishi inson ongining

shakllanishiga sezilarli ta'sir ko'rsatmoqda. Bu esa borliqni anglash jarayonining yangi bosqichga ko'tarilishiga olib kelmoqda. Ayniqsa, virtual reallik, sun'iy intellekt va raqamli kommunikatsiya vositalari insonning borliq haqidagi tasavvurlarini tubdan o'zgartirmoqda. Mazkur maqolaning dolzarbligi shundaki, unda borliq va ong o'rtasidagi dialektik munosabat zamonaviy sharoitda qayta tahlil qilinadi hamda ularning o'zaro bog'liqligi yangi falsafiy yondashuvlar asosida ochib beriladi. Tadqiqotning maqsadi borliq va ong kategoriyalarining o'zaro aloqadorligini chuqur o'rganish, ularning dialektik birligini ilmiy asoslash va zamonaviy jamiyat rivojida tutgan o'rnini aniqlashdan iborat.

Materiallar va metodlar

Mazkur tadqiqot borliq va ong o'rtasidagi dialektik birlikni o'rganishga qaratilgan bo'lib, unda falsafiy bilishning nazariy va metodologik yondashuvlari asos qilib olindi. Tadqiqotning metodologik bazasini klassik va zamonaviy falsafiy konsepsiyalar tashkil etadi. Xususan, ontologik va gnoseologik yondashuvlar orqali borliq va ong kategoriyalarining mohiyati, ularning o'zaro munosabati hamda rivojlanish qonuniyatlari tahlil qilindi. Tadqiqot materiali sifatida qadimgi yunon falsafasi, Sharq mutafakkirlarining qarashlari, Yangi davr falsafasi hamda zamonaviy falsafiy yo'nalishlarga oid ilmiy manbalar o'rganildi va umumlashtirildi. Shuningdek, borliq va ong muammosiga doir ilmiy maqolalar, monografiyalar va falsafiy asarlar qiyosiy tahlil asosida ko'rib chiqildi. Tadqiqotda quyidagi metodlardan foydalanildi: Dialektik metod – borliq va ongning o'zaro bog'liqligi, qarama-qarshiliklar birligi va rivojlanish jarayonini aniqlashda asosiy metod sifatida qo'llanildi. Tarixiy-falsafiy metod – turli davrlarda borliq va ong muammosiga berilgan talqinlarni o'rganish va ularning evolyutsiyasini tahlil qilishda ishlatildi. Qiyosiy (komparativ) metod – idealistik va materialistik yondashuvlarni taqqoslash orqali ularning o'xshash va farqli jihatlari aniqlashtirildi. Tahliliy metod – asosiy tushunchalar (borliq, ong, tafakkur, mavjudlik) mazmunini ochib berish va ularni tizimlashtirishda qo'llanildi. Sintez metodi – turli nazariy qarashlarni umumlashtirish orqali yagona konseptual xulosaga kelish imkonini berdi. Mazkur metodlar majmui tadqiqotning ilmiy asoslanganligini ta'minlab, borliq va ong o'rtasidagi dialektik birlikni har tomonlama yoritishga xizmat qildi.

Natijalar

Tadqiqot natijalari shuni ko'rsatdiki, borliq va ong o'rtasidagi munosabatni bir tomonlama talqin qilish (faqat materialistik yoki faqat idealistik) ushbu murakkab muammoning to'liq mohiyatini ochib bera olmaydi. Dialektik yondashuv esa borliq va ongni o'zaro bog'liq va bir-birini taqozo etuvchi kategoriyalar sifatida tushunishga imkon yaratadi. O'rganishlar natijasida quyidagi ilmiy xulosalar shakllantirildi: Borliq ongdan mustaqil ravishda mavjud bo'lsa-da, u inson ongida aks etish orqali ijtimoiy

ahamiyat kasb etadi. Ong esa borliqning oddiy aks ettiruvchisi emas, balki uni qayta ishlovchi, mazmunan boyituvchi faol jarayondir. Inson tafakkuri borliqni faqat passiv qabul qilmaydi, balki uni anglash, baholash va o'zgartirish jarayonida faol ishtirok etadi. Zamonaviy axborot va raqamli texnologiyalar inson ongining shakllanishiga yangi omil sifatida ta'sir ko'rsatib, borliqni idrok etish shakllarini kengaytirmoqda. Borliq va ong o'rtasidagi dialektik birlik ijtimoiy ong shakllari (ilm-fan, madaniyat, axloq) orqali yanada murakkablashib, yangi sifat bosqichlariga ko'tarilmoqda.

Muhokama

Olingan natijalar falsafa tarixida shakllangan asosiy konsepsiyalar bilan uyg'un holda tahlil qilindi. Xususan, klassik falsafada borliq va ong o'rtasidagi qarama-qarshilik ko'proq birini ustun qo'yish orqali hal etilgan bo'lsa, zamonaviy falsafiy yondashuvlar ushbu muammoni integrativ tarzda ko'rib chiqishga intiladi. Tadqiqot natijalari shuni ko'rsatadiki, dialektik yondashuv borliq va ong o'rtasidagi munosabatni eng to'liq va izchil tushuntirib bera oladi. Chunki bu yondashuv ularni qarama-qarshi emas, balki o'zaro bog'liq va bir-birini to'ldiruvchi hodisalar sifatida talqin qiladi. Biroq muhokama jarayonida ayrim muammoli jihatlar ham aniqlandi. Jumladan, zamonaviy texnologiyalar ta'sirida inson ongining sun'iy ravishda shakllanishi, virtual borliqning kengayishi va real voqelik bilan o'zaro nisbatining o'zgarishi yangi falsafiy savollarni yuzaga keltirmoqda. Bu esa borliq va ong o'rtasidagi an'anaviy tushunchalarni qayta ko'rib chiqishni talab etadi.

Xulosa

Mazkur tadqiqot natijasida borliq va ong o'rtasidagi munosabatni bir tomonlama emas, balki dialektik birlikda o'rganish zarurligi ilmiy jihatdan asoslab berildi. Tadqiqot shuni ko'rsatdiki, borliq va ong bir-biridan mustaqil holda mavjud bo'lishi bilan birga, ular o'zaro uzviy bog'langan va bir-birini to'ldiruvchi kategoriyalar hisoblanadi. Borliq ong uchun obyektiv asos vazifasini bajarsa, ong esa borliqni anglash, aks ettirish va qayta shakllantirish orqali faol rol o'ynaydi. Shuningdek, zamonaviy ijtimoiy va texnologik rivojlanish sharoitida ongning yangi shakllari yuzaga kelayotgani, bu esa borliqni idrok etish jarayonining murakkablashuviga olib kelayotgani aniqlandi. Ayniqsa, raqamli muhit, virtual reallik va sun'iy intellektning rivojlanishi borliq va ong o'rtasidagi an'anaviy chegaralarning nisbiylashuviga sabab bo'lmoqda. Tadqiqot natijalari asosida quyidagi xulosalarga kelindi: borliq va ong dialektik birlikda rivojlanadi va bir-birisiz to'liq tushunib bo'lmaydi; ong faqat aks ettiruvchi emas, balki faol o'zgartiruvchi kuch sifatida namoyon bo'ladi; zamonaviy sharoitda borliqni anglash jarayoni yangi falsafiy yondashuvlarni talab etadi; inson tafakkurining rivojlanishi ijtimoiy, madaniy va texnologik omillar bilan bevosita bog'liqdir. Umuman olganda, borliq va ong o'rtasidagi dialektik birlikni chuqur o'rganish nafaqat

falsafiy bilimlarni boyitadi, balki insonning o‘zini va atrof-muhitni anglash jarayonini yanada mukammallashtirishga xizmat qiladi.

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PERSONALIZATION OF TREATMENT AND PREVENTION TACTICS IN THE EARLY STAGES OF AVASCULAR NECROSIS OF THE HIP BONE BASED ON CLINICAL AND GENETIC PROFILING

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Introduction. Avascular necrosis of the femoral head (ANFH) is a progressive degenerative-dystrophic disease that leads to persistent pain, limited mobility, and a significant decrease in the quality of life in patients of working age. The traditional assessment of patients' condition, which is based primarily on the radiological characteristics of the disease stage, does not always allow for predicting the rate of progression and the individual response to conservative therapy. Therefore, the integration of molecular genetic parameters into the algorithms for selecting treatment and rehabilitation strategies is of particular interest. One of the promising areas is the study of PPAR γ gene polymorphism, which is associated with lipid metabolism, osteogenesis, and bone remodeling, and may have a direct impact on the course of ANFH and the effectiveness of early pathogenetic intervention.

The purpose of the study. To evaluate the effectiveness of a personalized approach to the treatment and prevention of the progression of early stages of ANFH, taking into account the polymorphism of the PPAR γ gene (Pro12Ala), compared to standard treatment tactics.

Materials and methods. A comparative clinical study was conducted, including patients with ANFH stages I–II. The main group consisted of 86 patients, in whom the medical and rehabilitation program was formed taking into account the PPAR γ genotype and included a combination of PRP-therapy with systemic use of alendronate. The comparison group included 128 patients who received traditional treatment without taking into account their molecular and genetic characteristics. In both groups, the severity of pain was assessed using a visual analog scale, the functional state of the hip joint was evaluated using the Harris Hip Score, and the dynamics of laboratory and metabolic parameters were monitored. A comparative analysis was performed 6 and 12 months after the start of treatment.

Results. It was found that the use of personalized tactics was accompanied by a more pronounced clinical and functional improvement compared to the standard approach. After 12 months, the main group showed a significant decrease in pain intensity: the

Visual analogue scale score was 1.5 ± 0.2 , compared to 2.5 ± 0.2 in the comparison group. At the same time, a more significant restoration of hip joint function was recorded: the Harris Hip Score reached 86.2 ± 1.2 points against 79.2 ± 1.4 points, respectively. Of particular importance was the more favorable morphological dynamics: the frequency of disease progression in the main group was 14.0%, whereas with standard tactics this indicator reached 36.7%. Complete morphological regression of focal changes was achieved in 37.2% of patients with personalized management and only in 17.2% of patients in the comparison group.

The analysis also showed the prognostic significance of the genetic factor. The Ala/Ala genotype was associated with the most unfavorable course of the disease, a higher probability of structural progression, and less resistance to standard therapy. This allows us to consider PPAR γ genotyping not only as an additional research tool, but also as a practically significant element of risk stratification in patients with early stages of ANFH.

Along with the clinical and functional results, the main group showed more favorable changes in the metabolic profile. The frequency of dyslipidemia was 26.7% versus 48.4% in the comparison group, insulin resistance was 22.1% versus 44.5%, and metabolic syndrome was 11.6% versus 29.7%. In addition, patients who received personalized treatment were less likely to have osteopenia, osteoporosis, and signs of bone marrow fatty degeneration. These data indicate that an individualized approach affects not only the local course of the pathological process in the femoral head, but also the systemic metabolic mechanisms that determine the effectiveness of rehabilitation and the sustainability of the clinical outcome.

Discussion. The obtained results confirm that the early stages of ANFH require not only timely diagnosis, but also a differentiated selection of medical and preventive measures. Taking into account genetic polymorphism allows us to identify patients with a high risk of progression, determine in advance the need for more active pathogenetic correction, and thereby increase the targeting of conservative therapy. It is especially important that this strategy not only temporarily reduces symptoms, but also stabilizes the process in a more stable functional and structural manner, which is crucial for delaying organ-preserving and even more so, endoprosthetic interventions.

Conclusions. A personalized approach to the treatment and rehabilitation of patients with stage I-II ANFH, based on the consideration of PPAR γ (Pro12Ala) polymorphism and the use of combined therapy, provides a more pronounced reduction in pain syndrome, improvement in functional status, a decrease in the frequency of morphological progression, and a favorable correction of concomitant metabolic disorders. The inclusion of clinical and genetic profiling in the practical algorithm for

managing patients with early stages of ANFH appears to be a promising direction for improving the effectiveness of treatment and preventing further destruction of the hip joint.

MULTIFACETOR RISK ANALYSIS OF LOCAL COMPLICATIONS OF AN INTESTINAL STOMA AS A BASIS FOR PERSONALIZED REHABILITATION

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Introduction. The formation of an intestinal stoma is accompanied by a high risk of local complications, which significantly limit the effectiveness of postoperative rehabilitation. Modern concepts indicate the multifactorial nature of complications, however, in clinical practice, there is a tendency to isolated assessment of risk factors without their integration into a single decision-making system.

The purpose of the study. To study the combined effect of clinical and surgical risk factors on the development of local complications of intestinal stoma and to determine their significance for the formation of rehabilitation tactics.

Materials and methods. A retrospective analysis of 156 patients after intestinal stoma formation was performed. 21 risk factor was evaluated, including preoperative characteristics, intraoperative features, and early postoperative parameters. A comparative analysis of the frequency of complications was performed, depending on the presence and combination of risk factors, as well as their clinical significance.

Results and discussion. The incidence of local complications was 39.1%. It was found that intraoperative and ischemic factors play a key role: complications developed in 92.9% of cases with signs of impaired blood supply, compared to 27.3% ($p < 0.001$), and in 87.5% of cases with early signs of ischemia, compared to 33.6% ($p < 0.001$). Systemic factors had a significant impact: diabetes mellitus (68.9% vs. 27.0%; $p < 0.001$), hypoalbuminemia (60.6% vs. 23.3%; $p < 0.001$), and the emergency nature of the intervention (56.8% vs. 20.0%; $p = 0.0001$). It is crucial to note that the frequency of complications is directly related to the number of risk factors. As the number of risk factors increases, not only does the frequency of complications increase, but their clinical structure also becomes more severe, leading to the development of combined forms. The data obtained indicate that it is the combination of factors that determines a patient's individual risk. From the perspective of rehabilitation, this necessitates the early identification of high-risk groups for intensive preventive measures.

Conclusions. Local complications of intestinal stoma have a pronounced multifactorial nature, and their risk is determined by the combined influence of factors. The results of the study substantiate the need to integrate factor analysis into the system of personalized medical rehabilitation of patients.

HISTOLOGY OF THE PANCREAS IN DIABETES MELLITUS: “DEGENERATION” OF THE ISLETS OF LANGERHANS

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Abstract: This article provides a scientific analysis of histological changes in the pancreas in diabetes mellitus, with particular emphasis on the degeneration of the Islets of Langerhans. Diabetes mellitus, especially type 1, is characterized by autoimmune destruction of β -cells, islet atrophy, inflammatory infiltration, and fibrotic changes. In type 2 diabetes, amyloid deposition and progressive functional impairment are observed. These alterations lead to reduced insulin secretion and severe metabolic disturbances in the organism. The findings confirm that structural and functional damage of the Islets of Langerhans represents a central mechanism in the pathogenesis of diabetes mellitus.

Keywords: diabetes mellitus, pancreas, Islets of Langerhans, β -cells, insulitis, fibrosis, amyloid.

Introduction. Diabetes mellitus is one of the most complex and prevalent chronic endocrine disorders, characterized by impaired insulin secretion, reduced insulin action, or a combination of both. It represents a major global public health challenge, with a continuously increasing incidence and significant contribution to morbidity and mortality due to cardiovascular, renal, and neurological complications.

The endocrine portion of the pancreas-the Islets of Langerhans-serves as the central morphofunctional unit in the pathogenesis of diabetes mellitus. Within these islets, β -cells are responsible for insulin production, thereby regulating glucose metabolism and maintaining energy homeostasis. In addition, α -, δ -, and PP-cells contribute to the neuroendocrine regulation of glucose balance through the secretion of glucagon, somatostatin, and pancreatic polypeptide.

Type 1 diabetes mellitus is primarily an autoimmune disease in which T-lymphocytes mediate the destruction of β -cells, leading to absolute insulin deficiency. Histologically, this process is characterized by insulitis, defined as lymphocytic infiltration of the islets. In type 2 diabetes, insulin resistance initially leads to

compensatory β -cell hyperactivity, followed by progressive functional exhaustion and apoptosis.

Under chronic hyperglycemic conditions, progressive degenerative changes develop within the Islets of Langerhans, including reduction of β -cell mass, islet atrophy, increased connective tissue proliferation (fibrosis), and in some cases deposition of islet amyloid polypeptide (IAPP). These alterations further impair insulin secretion and exacerbate metabolic dysregulation.

Therefore, the study of histological alterations in the pancreas, particularly the degenerative processes of the Islets of Langerhans, is of significant scientific importance for understanding the pathogenesis of diabetes mellitus and for developing novel therapeutic strategies.

Main Part: The pancreas is a mixed gland with a complex morphofunctional structure consisting of both exocrine and endocrine components. The exocrine portion forms the major part of the gland and is composed of acinar cells responsible for the secretion of digestive enzymes such as amylase, lipase, and trypsinogen. The endocrine portion is represented by the Islets of Langerhans, which are diffusely distributed within the pancreatic parenchyma and serve as the principal neuroendocrine units responsible for maintaining glucose homeostasis.

Within the Islets of Langerhans, several distinct cell populations are identified, among which β -cells play a central role. β -cells synthesize and secrete insulin, the key hormone responsible for lowering blood glucose levels. α -cells produce glucagon, which increases blood glucose concentration, while δ -cells secrete somatostatin, which inhibits endocrine secretion. PP-cells produce pancreatic polypeptide that modulates gastrointestinal function. These cells interact through a highly coordinated neuroendocrine network to maintain glucose balance.

In diabetes mellitus, particularly type 1 diabetes, significant structural and functional alterations occur in the endocrine pancreas. Autoimmune mechanisms involving CD4⁺ and CD8⁺ T-lymphocytes target β -cells, leading to their progressive destruction. Histologically, this process is characterized by insulitis, defined as lymphocytic infiltration of the Islets of Langerhans. The loss of β -cells results in a marked reduction in insulin secretion and ultimately absolute insulin deficiency.

As the disease progresses, islet atrophy develops, characterized by a reduction in islet size, decreased cellularity, and diminished functional activity. Chronic hyperglycemia further promotes collagen deposition within the islet stroma, leading to fibrosis. This process compresses endocrine cells, disrupts trophic support, and further impairs secretory function.

In type 2 diabetes mellitus, the primary pathological mechanism is insulin resistance. Initially, β -cells undergo compensatory hypersecretion; however, over time, functional exhaustion and apoptosis occur. At this stage, degenerative changes are accompanied by deposition of islet amyloid polypeptide (IAPP) within the islets. These amyloid aggregates damage cell membranes, enhance oxidative stress, and accelerate β -cell death.

Additionally, inflammatory mediators such as IL-1 β , TNF- α , and IFN- γ exacerbate β -cell destruction and induce oxidative stress and mitochondrial dysfunction within the local microenvironment. As a result, insulin secretion is further reduced, leading to worsening metabolic disturbances.

Overall, structural and functional damage of the Islets of Langerhans represents a central mechanism in the pathogenesis of diabetes mellitus. These histological changes form the morphological basis of insulin deficiency, hyperglycemia, lipid metabolism disorders, ketoacidosis in type 1 diabetes, and metabolic syndrome in type 2 diabetes.

Conclusion. Histological alterations of the pancreas in diabetes mellitus, particularly the degeneration of the Islets of Langerhans, represent one of the central morphofunctional mechanisms in the pathogenesis of the disease. Research indicates that in type 1 diabetes mellitus, autoimmune processes lead to progressive destruction of β -cells and, in the context of insulinitis, result in absolute insulin deficiency. In type 2 diabetes mellitus, insulin resistance is accompanied by β -cell functional exhaustion, amyloid deposition, and chronic degenerative changes.

Atrophy, fibrosis, and cellular loss within the Islets of Langerhans lead to a marked reduction in insulin secretion, resulting in severe metabolic disturbances in the organism. Therefore, the study of the endocrine pancreas morphology is of significant scientific importance for understanding the pathogenesis of diabetes mellitus, improving early diagnostic approaches, and developing novel therapeutic strategies.

Overall, structural and functional impairment of the Islets of Langerhans constitutes a central event in the development of diabetes mellitus, making its investigation a highly relevant field in modern endocrinology and pathological anatomy.

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DETERMINING THE EFFECTIVENESS OF COMPREHENSIVE DIAGNOSIS OF CERVICAL PRECANCER AND CANCER

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Relevance. Early diagnosis of precancer and cervical cancer should be based on the use of a combination of methods: liquid cytology, HPV testing using the PCR-HB method and ICC with double staining p16/Ki67 - this significantly increases their sensitivity and specificity.

Keywords: human papillomavirus, cervical cancer, cervical intraepithelial neoplasia.

Abstract. Cervical cancer is the most common form of oncological pathology of the female reproductive system. In terms of incidence, cervical cancer ranks 7th among all malignant tumors and 3rd among malignant tumors in women (after breast cancer and colon cancer) and accounts for 9.8% [1,9]. In 2022, 527,624 cases of cervical cancer were registered worldwide [1,11], with 265,653 deaths. Mortality from cervical cancer ranks 9th among all malignant tumors and 2nd among epithelial malignant tumors of the female reproductive system [1,12]. Cervical cancer most often affects women under 35 years of age, often with a subsequent fatal outcome [3,13]. In Uzbekistan, the incidence of cervical cancer is growing annually, which indicates the inadequacy of measures related to the primary and secondary prevention of this disease. In 2019, 14.7 thousand patients with cervical cancer were registered in Uzbekistan. The mortality rate from cervical cancer in Uzbekistan in 2019 was 5.2 per 100,000 and is currently the leading cause of death among all women with cancer aged 15 to 40 years (± 19.5). After 40 years, mortality from cervical cancer moves to 2nd place (9.7%) [1,5,9,10]. The survival rate of patients with cervical cancer depends primarily on the level of the healthcare system in different regions. In less socio-economically developed countries, cervical cancer is mostly diagnosed at a late stage of the disease, therefore, low survival rates are recorded. The 5-year survival rate among women diagnosed with late-stage cervical cancer is approximately 30% lower than in more developed countries [1,10]. Clinical symptoms in patients with cervical diseases are usually caused by the presence of combined uterine pathology (endo- and myometrium). The combination of uterine fibroids with adenomyosis and/or endometrial hyperplasia in patients with CIN III (47.6%) and cervical cancer (59.1%) ($p < 0.05$) is significantly more common than the combination with other cervical pathologies. This fact is apparently due to the mutually stimulating influence of pathological processes in the endo- and myometrium on the

condition of the cervix, which is realized through the mechanisms of intercellular interactions of growth factors [15].

Objective of the study. To evaluate the effectiveness of cytological, immunocytochemical, and HPV testing for the detection of cervical precancer and cancer, and to study the pathological and morphological features of cervical repair processes in the presence of HPV infection.

Materials and methods. All 167 women were examined according to a standard protocol: clinical examination, collection of smears in SurePath vials (BD, USA), preparation of Papanicolaou-stained cytological preparations using a TriPath processor (BD, USA), and smear evaluation using the Bethesda system [1,13]. Three groups of women were selected: 1) 91 women to evaluate the effectiveness of HPV testing using the PCR-NV method and liquid-based cytology in detecting HPV-associated cervical pathology in women aged 30 years and older. 2) 148 women to evaluate the effectiveness of a combination of methods: liquid-based cytology, double immunostaining of p16/Ki67 and HPV testing using the PCR-NV method for HPV-associated cervical pathology. 3) 61 women to study the morphological and immunohistological features of different types of SEMS. At the first stage, 91 patients aged 17 to 56 years were included in the study with the following examinations: 1) detection of cervical pathology after liquid cytology; 2) performing colposcopy with targeted sampling of altered or suspicious areas of the cervical canal for histological examination; 3) conducting a molecular biological study to study the expression of p16/Ki-67 markers and HPV DNA genotypes in cytological preparations prepared from residual material.

Study results. In the second stage, the effectiveness of p16/Ki67 dual staining in combination with liquid-based cytology and HPV testing using the NR-PCR method for detecting cervical pathology was assessed. Cytological and biopsy specimens from 148 women with cervical pathology were examined. Cytological examination of cervical smears prepared using liquid-based cytology was performed. Depending on the cytological diagnosis, all patients were divided into five groups: H-SIL (57 women), L-SIL (39), ASC-US-H (4), ASC-US-R (26), and NILM (22).

Next, double immunostaining of cytological specimens was performed using two antibodies: p16 and Ki67. p16/Ki67 expression was detected both in isolated atypical cells and in aggregates of atypical squamous epithelial cells. The number of positive cells with double staining did not exceed 30% of the total number of cells in L-SIL and ranged from 30% to 100% in H-SIL. In NILM, individual p16-positive cells were detected, as well as atrophic and dystrophic changes, which allowed them to be classified as “senescent” cells [9,14]. Based on the results of double immunostaining,

the diagnosis of ASC-US-R and ASC-US-H was changed to H-SIL (7 women), L-SIL (4), or NILM (19). In addition, in three cases, L-SIL was changed to H-SIL, since the number of atypical cells with double staining amounted to 90% of all cells in the complex. In one case, the cytological diagnosis of L-SIL was changed to NILM due to the lack of expression of the p16 and Ki67 tumor markers in the cells of the squamous epithelium of the cervix. The histological result of "chronic cervicitis" confirmed the correctness of the diagnosis change. The double immunostaining method does not require counting positive cells, according to the manufacturer's instructions. However, we observed a direct correlation between the number of p16/Ki-67–positive cells and the degree of cervical lesion. Thus, in cytological preparations diagnosed with H-SIL, the content of double-stained positive cells in the atypical squamous epithelial cell complexes of the cervix was 80-100%. Our observations coincided with the results of Yoshida T [1,3,14]. IHC analysis of samples with CIN $\geq$ II showed increased expression of the p16 protein throughout the entire depth of the epithelial layer, and Ki67 in 60% to 100% of cervical epithelial cells. HPV DNA was detected in cytological material using the PCR-NV method on a Cobas 4800 device, and the results were compared with the histological conclusion. In smears with a diagnosis of NILM, HPV DNA was detected in 1 sample out of 22 (4.55%). In samples with a diagnosis of L-SIL, the test was positive in 34 cases out of 39 (87.18%). The most frequently observed combination was a common pool of 12 types of highly oncogenic HPV (31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 66 and 68) and HPV DNA type 16 - in 23 out of 34 smears (67.65%). In samples with a diagnosis of L-SIL, HPV DNA was detected in 34 cases out of 39 (87.18%). HPV DNA was detected in 53 of 57 samples (92.98%) with H-SIL assays, primarily HPV type 16 (40 of 53 cases, 75.47%). In samples diagnosed with ASC-US-R, it was detected in 8 of 26 cases (30.77%), and ASC-US-H in 2 of 4 cases (50.0%). Moreover, the most common pool of 12 high-oncogenic HPV types was detected in 8 of 11 (72.72%) of the 70 samples.

Conclusions. It has been established that a combination of methods should be used for the early diagnosis and screening of HPV-associated cervical pathology: liquid-based cytology, HPV testing using the PCR-NV method, and ICC with dual p16/Ki67 staining. This significantly increases their sensitivity and specificity. Screening for cervical cancer in women under 30 years of age should begin with liquid cytology, and in women over 30 years of age – with HPV testing, which is determined by the evolution of the pathological process and economic factors.

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DARSDA JUFTLIK VA KICHIK GURUH ISHLARINI SAMARALI TASHKIL ETISH

Eshqorayeva Ibodat

Termiz shahar 2-son texnikumi Ingliz tili fani o'qituvchisi

Annotatsiya. Ushbu maqolada dars jarayonida juftlik (pair work) va kichik guruh (small group work) ishlarini samarali tashkil etishning didaktik-psixologik asoslari hamda amaliy mexanizmlari yoritiladi. Asosiy e'tibor vaqtning boshqarish, vazifa dizayni, rollarni taqsimlash, baholash va intizomni saqlash, shuningdek, "hamma gapirmaydi" muammosi, kuchli-talaba hukmronligi, ona tilga o'tib ketish kabi tipik to'siqlarni minimal resurs bilan bartaraf etishga qaratiladi. Tajriba yondashuvi sifatida strukturali hamkorlik (structured collaboration), aniq chiqish mahsuloti (clear output), mikro-rotatsiya (micro-rotation) va tezkor formatif feedback protokollari taklif etiladi. Natijada juftlik va kichik guruh ishlari faqat "faollik" emas, balki o'lchanadigan o'quv natijasi (learning outcome) beradigan, o'qituvchi uchun boshqariladigan tizimga aylanishi asoslanadi.

Kalit so'zlar: juftlik ishlari, kichik guruh ishlari, hamkorlikda o'qitish, vazifa dizayni, rollar, formatif baholash, sinf boshqaruvi, time management.

Kirish. Zamonaviy pedagogik yondashuvlarda o'quvchining faol ishtiroki (active learning) ta'lim sifatining tayanch omili hisoblanadi. Ayniqsa, til o'rganish, muammoli ta'lim, loyiha asosida o'qitish, kommunikativ kompetensiyani shakllantirish kabi yo'nalishlarda juftlik va kichik guruh ishlari o'quvchilarni "tinglovchi" holatidan "amal qiluvchi" holatiga o'tkazadi. Biroq ko'plab darslarda pair/group work kutilgan natijani bermaydi: vaqt zoye ketadi, shovqin nazoratdan chiqadi, bir-ikki o'quvchi ishlaydi, boshqalar passiv qoladi, o'qituvchi esa "hamma ishlayotgandek" ko'rinishga aldanadi. Muammo usulning o'zida emas, uning dizayni va boshqaruvida.

Samarali juftlik va guruh ishi uchta shartga tayanadi. Birinchisi, vazifa aniq maqsad va o'lchanadigan mahsulotga (output) ega bo'lishi. Ikkinchisi, rollar va jarayon qoidalari oldindan belgilanishi. Uchinchi shart, baholash va feedback tizimi mavjud bo'lishi. Ushbu uch komponent bo'lmasa, hamkorlik ishlari "bo'sh suhbat"ga aylanib qoladi. Shu sababli maqolada pair/group workni darsning har bir bosqichida (kirish-asosiy qism-yakun) qanday joylashtirish, qanday qilib 5–7 daqiqada ham yuqori samaraga erishish mumkinligi izohlanadi.

Metodologiya. Ushbu ishlanma amaliy-metodik tahlil va sinf kuzatuvlari asosida ishlab chiqilgan. Modellash (modeling) usuli bilan juftlik/guruh ishining ssenariylari

tuzildi, tipik muammolar ro'yxati shakllantirildi va ularni bartaraf etish uchun "tezkor protokollar" taklif qilindi. Yondashuv quyidagi komponentlardan iborat: (1) vazifa dizayni (task design), (2) guruh tuzilmasi (group structure), (3) vaqt va signal tizimi (time & signals), (4) monitoring va aralashuv (teacher monitoring), (5) baholash va yakun (assessment & closure).

Natijalar. Tavsiya etilgan mexanizmlar asosida tashkil etilgan pair/group work quyidagi natijalarga olib keladi: o'quvchi ishtiroki kengayadi (hamma minimal darajada gapiradi/yozadi), dars intizomi boshqariladigan bo'ladi (shovqin "ish shovqini"ga aylanadi), o'qituvchi real monitoring orqali individual xatolarni aniqlaydi, hamkorlik mahsuloti aniq bo'lgani uchun baholash osonlashadi. Eng muhimi, juftlik/guruh ishi "vaqt to'ldirish" emas, mazmunli o'qitish texnologiyasiga aylanishi kuzatiladi.

Muhokama. Samarali tashkil etishning amaliy qoidalari quyidagicha.

1. Vazifani "1 gapda" tushuntirish va namuna ko'rsatish. O'qituvchi ko'p gapirsa, o'quvchi kam ishlaydi. Shuning uchun vazifa instruktsiyasi bir gap bo'lishi, keyin 10–15 soniyalik demo (o'qituvchi + 1 o'quvchi) bilan ko'rsatilishi kerak. Masalan: "Juftingiz bilan 3 ta sabab toping va bitta umumiy xulosani yozing." Demo: "Men sabab aytaman, siz yozasiz, keyin almashamiz."
2. Aniq "output" belgilash. Pair/group workning eng katta xatosi: mahsulot noaniq. "Gaplashib olinglar" — natija bermaydi. Outputlar: 3 ta punkt, 1 ta jadval, 1 ta poster, 5 ta savol, 1 ta rol o'yini ssenariysi, 60 soniyalik pitch, 1 ta yechim algoritmi. Output bo'lsa, hamma yo'nalishli ishlaydi.
3. Rollarni taqsimlash (3–4 kishilik guruh uchun). Rollar hammani ishga tortadi.
 - Leader (boshlaydi, vaqtni kuzatadi)
 - Recorder (yozadi)
 - Speaker (taqdim qiladi)
 - Checker (shart va mezonni tekshiradi)
 Rollar 1–2 darsda rotatsiya qilinadi, shunda bir o'quvchi doimiy "spiker" bo'lib qolmaydi.
4. Guruh hajmini to'g'ri tanlash. Eng samarali: juftlik va 3 kishilik guruh. 5–6 kishilik guruhda "bekorchi" paydo bo'ladi. Agar sinf katta bo'lsa, 4 kishilik guruhdan oshirmaslik ma'qul.
5. Vaqtni mikro-bloklarga bo'lish. 10 daqiqalik vazifa o'rniga 3+3+3 daqiqa ishlaydi: (a) g'oya yig'ish, (b) saralash, (c) yakuniy mahsulot. Har blok uchun signal: "Start", "30 seconds left", "Stop". Signal oddiy bo'lishi mumkin: qo'l ko'tarish, doskaga taymer chizish, bir xil ibora ("Freeze").

6. Ona tiliga o'tib ketishni boshqarish. Ta'qiqlash ko'pincha samara bermaydi. Yaxshiroq yo'l: "til tayanchi" berish. Duskaga 6–8 ta zarur ibora yoziladi: "In my opinion...", "What do you think?", "Let's choose...", "I agree/disagree because...". Shunda o'quvchi inglizcha (yoki kerakli til) bilan ishlashga o'tadi. Shuningdek, "2 daqiqa faqat target language" qoidasi bilan boshlash foydali.

7. Monitoring: o'qituvchi "aylanib yuradi", lekin gapni egallab olmaydi. Monitoringning 3 turi:

- Observe (tinglaydi, yozib oladi)
 - Prompt (bitta yo'naltiruvchi savol beradi)
 - Repair (keng tarqalgan xatoni keyin umumiy feedbackda tuzatadi)
- O'qituvchi har guruhda 10–20 soniyadan ortiq turib qolmasin, aks holda boshqalar bo'shab qoladi.

8. "Hamma gapirmaydi" muammosi uchun strukturali texnikalar.

- Think–Pair–Share: avval yakka fikr, keyin juft, so'ng sinf.
- Numbered Heads: guruhda raqam beriladi, o'qituvchi raqam chaqiradi — hamma tayyor turadi.
- Round Robin: navbat bilan 1 tadan g'oya aytish majburiy.
- Information Gap: har o'quvchida ma'lumotning bir qismi bo'ladi, bir-biridan so'ramasa vazifa tugamaydi.

9. Baholash va javobgarlik (accountability). Pair/group work baholanishi shart emas, lekin javobgarlik bo'lishi shart. 2 ta oddiy yo'l:

- "Exit ticket": har o'quvchi dars oxirida 1–2 jumla yozib topshiradi.
- "Random speaker": kim taqdim qilishini o'qituvchi tanlaydi, demak hamma tayyorlanadi.

Baholash mezoni kichik: "mavzuga moslik", "to'liqlik", "aniqlik", "hamkorlik".

10. Yakun: 2 daqiqalik "common errors + best ideas". O'qituvchi 3 ta yaxshi ibora, 2 ta tipik xato, 1 ta rivojlanish tavsiyasini umumlashtiradi. Bu guruh ishini o'quv natijasiga "bog'lab" qo'yadi, ya'ni u shunchaki faoliyat bo'lib qolmaydi.

Xulosa. Juftlik va kichik guruh ishlari darsda eng kuchli interaktiv mexanizmlardan biridir, ammo u faqat "tashkiliy intizom" bilan emas, didaktik dizayn bilan samarali bo'ladi. Agar vazifa aniq outputga ega bo'lsa, rollar taqsimlansa, vaqt mikro-bloklarga bo'linsa, o'qituvchi monitoringni to'g'ri yo'lga qo'ysa va yakunda qisqa feedback berilsa, pair/group work darsning natijadorligini keskin oshiradi. Eng muhim prinsip: "hamma nimadir qilishi shart" va "qilgan ish natijaga aylanishi shart". Shu yondashuv orqali o'qituvchi minimal resurs bilan ham yuqori faollik, yuqori sifat va o'lchanadigan ta'lim natijasiga erisha oladi.

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ORQA MIYA ANATOMIYASI , GISTOLOGIYASI VA PATOLAGIK KASALLIKLARI

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Annotatsiya : Ushbu maqolada orqa miya tuzilishi, uning anatomik va gistologik xususiyatlari hamda patologik jarayonlar natijasida yuzaga keladigan kasalliklar tahlil qilingan. Orqa miya markaziy nerv tizimining muhim bo‘lagi sifatida organizmning harakat va sezgi faoliyatini boshqarishda tutgan o‘rni yoritilgan. Gistologik jihatdan orqa miya moddalari — kulrang va oq modda tuzilishi, nerv hujayralari va glial elementlarning funksional ahamiyati ko‘rib chiqilgan. Shuningdek, travmatik shikastlanishlar, degenerativ kasalliklar, yallig‘lanish jarayonlari va tug‘ma nuqsonlar kabi patologik holatlar klinik misollar asosida tahlil etilgan. Maqola orqa miya kasalliklarini chuqur o‘rganish, ularning oldini olish va davolashda ilmiy asoslangan yondashuvlarni shakllantirishga xizmat qiladi.

Kalit so`zlar : Neyronlar va glial hujayralar faoliyati, orqa miya patologiyasi, travmatik shikastlanishlar, degenerativ kasalliklar, yallig‘lanish jarayonlari va tug‘ma nuqsonlar tahlil qilingan.

АНАТОМИЯ, ГИСТОЛОГИЯ И ПАТОЛОГИЧЕСКИЕ ЗАБОЛЕВАНИЯ СПИННОГО МОЗГА

АННОТАЦИЯ: В данной статье рассмотрены строение спинного мозга, его анатомические и гистологические особенности, а также заболевания, возникающие в результате патологических процессов. Освещена роль спинного мозга как важнейшей части центральной нервной системы в управлении двигательными и сенсорными функциями организма. С гистологической точки зрения проанализированы серое и белое вещество, нервные клетки и глиальные элементы. Также изучены патологические состояния, такие как травматические повреждения, дегенеративные заболевания, воспалительные процессы и врождённые пороки. Статья направлена на углублённое изучение заболеваний спинного мозга, их профилактику и разработку научно обоснованных подходов к лечению.

Ключевые слова: деятельность нейронов и глиальных клеток, патология спинного мозга, травматические повреждения, дегенеративные заболевания, воспалительные процессы и врождённые пороки.

Orqa miya – umurtqa pog‘onasi kanali ichida joylashgan bo‘lib lotinchada „medulla spinalis“ deyiladi . Yuqori uchi uzunchoq miyaga davom etsa , pastki qismi uchlik

holda II bel umurtqasi sohasida yakunlanadi (conus medullaris) . Shu sababli orqa miya suyuqligini chiqarish (punksiya) yoki anesteziya III va IV bel umurtqalarining qirrali o`simtalari orasidan bajariladi . Orqa miya orqa va old tomonga biroz yassilangan nayga ( silindr shakliga ) o`xshagan bo`ladi . Shuning uchun umurtqa pog`onasining bo`yin , ko`krak qiyshaymalarini (oldinga va orqaga) takrorlaydi. Orqa miya pastki uchi tobora torayib borib konus shaklida tugaydi va shu konusning pastga qaragan uchidan ingichka tola ketadi , u oxirgi ip filum terminale deb ataladi va kata yoshli odamlarda uning uzunligi 15 sm bo`ladi. Oxirgi ip ikkinchi dum umurtqasi qarshisida , uni ichidan qoplovchi pardada tugaydi.

Orqa miya old va oqa tomondan o`rta chiziqdan uzunasiga ketgan ikkita chuqur egat yordamida ikkita teng bo`lakka , ya`ni o`ng va chap bo`laklarga ajraladi. Egatlarning oldingisi orqadagisiga qaraganda ancha chuqur bo`lib, bunga fissura mediana ventralis anterior, orqadagi yuzarog`iga esa sulcus medianus dorsalis posterior deyiladi. Orqa egatning tagiga orqa miyaning orqa qismini ikkiga ajratib turgan yupqa parda – septum medianum kelib tutashadi. Orqa miya oldingi va orqa egatlarining tashqi tomonida joylashgan qismlari yana bir juftdan yon egatlar , ya`ni oldingi yon egatlar - sulcus lateralis anterior , orqadagi yon egat - orqadagi yon egat – sulcus lateralis posterior yordamida har tomondan uchtdan tizimchaga bo`linadi. Bu yon egatlarning chuqurligi turlicha. Orqadagi yon egatlar birmuncha chuqur va yaxshi ko`rinadi. Tizimchalarning oldingisi – funiculus anterior boshqalariga nisbatan ingichkaroq bo`lib , fissura mediana anterior bilan sulcus lateralis anterior o`rtasida joylashadi , orqadagi tizimcha funiculus posterior orqadagi o`rta egat – sulcus medianus posterior bilan sulcus lateralis posterior o`rtasida , yon tizimcha funiculus lateralis esa sulcus lateralis anterior bilan sulcus lateralis posterior o`rtasida joylashgan. Bu yon egatlardan orqa miya nervlarining boshlang`ich nerv ildizlari chiqadi. Oldingi yon egatlar bo`ylab har ikki tomondan nervlarning oldingi ildizlari – radix ventralis, orqadagi yon egatlardan esa ularning orqadagi ildizlari – radix dorsalis chiqadi. Bu ildizlarning oldingisi harakatlantiruvchi nerv tolalaridan, orqadagi ildizchalari esa sezuvchi nerv tolalaridan tashkil topgan. Ular orqa miyadan chiqqandan so`ng umurtqalarning kemtiklari qo`shilishidan hosil bo`lgan yon teshiklar oldida yoki ichida bir-biri bilan birikadi va aralash ( harakatlantiruvchi va sezuvchi tolalardan tuzilgan ) nerv hosil qiladi. Shu ikki ildizchaning qo`shilish joyida orqadagi ildizcha hisobidan tuguncha – ganglion spinale paydo bo`ladi. Bunday ildizcha hamma orqa miya nervlarining orqadagi ildizlarida bor. Orqa miyadan hammasi bo`lib 31 juft nerv chiqadi. Orqa miya kulrang moddasining har qaysi nerv ildizchasi qarshisidagi qismi orqa miya bo`lagi (segmenti) deb ataladi. Demak, orqa miya 31 ta segmentdan iborat bo`lib, ular quyidagicha taqsimlanadi: bo`yin segmentlari – 8 , ko`krak segmentlari – 12 , bel segmentlari – 5 , dumg`aza

segmentlari – 5 , dum segmenti – 1. Orqa miyaning og'irligi 34 – 38 g bo'ladi. Yo'g'onligi hamma joyda bir xil emas, u ikki joyida anchagina yo'g'onlashgan. Birinchi yo'g'onlashma (intumescencia cervicalis) bo'yin qismida bo'lib, II bo'yin umurtqasi bilan II ko'krak umurtqalari oralig'iga to'g'ri keladi, ikkinchisi – bel qismidagi yo'g'onlashma (intumescencia lumbalis) ko'krak umurtqasi qarshisidan boshlanib , konusga qadar davom etadi. Bunday yo'g'onlashma orqa miyaning shu qismlaridan qo'l va oyoq muskullariga boradigan yo'g'on nervlaridan hosil bo'ladi. Bu yo'g'onlashgan qismlarda nerv hujayralari va ulardan chiquvchi nerv tolalarining miqdori boshqa qismlarga nisbatan ko'p.

Orqa miya ikki xil moddadan, ya'ni uning markazida joylashgan kulrang modda – substantia grisea va uni o'ragan oq modda – substantia alba tuzilgan bo'ladi. Kulrang modda orqa miyaning uzunasiga joylashgan bo'lib, oldidan orqasiga tomon cho'zilgan va bir-biri bilan ko'ndalang xari bilan qo'shilgan ikki kolonnadan iborat. Kolonnada oldingi kulrang ustun – columna grisea anterior va orqa kulrang ustun – columna grisea posteriorga ajratadi. Markaziy kanalning paski, konusga yaqin qismi kengaygan bo'lib, bunga oxirgi qorincha – ventriculus terminalis deyiladi, tepa tomoni esa uzunchoq miya kanali orqali bosh miyaning IV qorinchasi bilan qo'shiladi.

Orqa miya ko'ndalangiga kesilganda kulrang moddani kapalak shaklida yoki „H“ harfi shaklida bo'lishini ko'rish mumkin. Ana shu kulrang moddaning oldingi qismlari biroz kengaygan, orqa qismi esa, aksincha, toraygan , nayzasimon bo'ladi. Oldingi kengaygan qismini oldingi shoxlar – cornu anterior, orqadagi toraygan qismi – cornu posterior deyiladi. Oldingi va orqadagi shoxlarni bir biriga qo'shib turgan sohani zona intermedia ya'ni oraliq soha deyiladi. Ana shu oraliq soha birinchi ko'krak segmenti bilan uchinchi bel segmenti o'rtasida yon tomongabirmuncha turtib chiqqan bo'ladi. Bu joy tashqi yon shoxlar – cornua lateralia deb ataladi. Orqa miyaning bo'yin sohasida, orqa va oldingi shoxlar oralig'idagi oq modda bag'rda (kulrang modda yaqinida) ko'p tarmoqli nerv hujayralaridan iborat to'rsimon tuzilma bo'lib, bunga formation reticularis deyiladi.

Orqa miyani o'rovchi pardalar – meninges uch turag bo'linib, tashqi tomondan qattiq parda dura mater; o'rtadagi to'rsimon parda arachnoidea mater va ichki yumshoq parda – pia mater deyiladi. Orqa miyani o'raydigan pardalar, yuqori qismda bosh miyaning xuddi shunday pardalariga davom etadi.

Orqa miya qattiq pardasi umurtqa pog'onasidagi kanal devoir bilan orqa miya orasida joylashgan. Kanal devoir bilan qattiq parda orasida epidural bo'shliq – cavitas epiduralis joylashib, bu sohada yog' to'qimalari va venoz chigallar uchraydi.

Qattiq pardoning ichkarisida to'r parda joylashgan bo'lib, bu pardalar orasida subdural bo'shliq – spatium subdurale bo'ladi.

To` parda orqa miyaning egat va tirqishlari ustidan yo`naladi. Bu eagtlarning ichiga kirib, orqa miyani har tarafdan o`raydigan pardaga yumshoq parda deb ataladi. To`r va yumshoq parda orasidagi bo`shliq subaroxnoidal bo`shliq – cavitas subarochneoidalis joylashadi. Bu bo`shliq miya suyuqligi – liquor cerebrosppinalis bilan to`lib turadi. Orqa miya atrofidan bu bo`shliq bosh miya atrofidagi xuddi shunday bo`shliqqa davom etadi. O`z navbatida, orqa miya atrofidagi subaroxnoidal bo`shliqda frontal tekislikda joylashgan 19-23 tishsimon boylam – lig. denticulatum joylashadi. To`rsimon parda ostida joylashgan bu boylamlar suboraxnoidal bo`shliqni oldingi va orqa bo`limlarga bo`ladi va orqa miyaning harakatini cheklab turadi.

GISTOLOGIIYASI. Orqa miyaning kulrang moddasi neyronlar tanasidan, miyelinsiz va miyelinli ingichka nerv tolalaridan hamda neyroglidan tashkil topgan. Kulrang moddaning oq moddadan farq qiladigan asosiy tarkibiy qismi multipliyar neyronlar hisoblanadi. Kattaligi, nozik tuzilishi va funksional ahamiyatiga ko`ra o`xshash neyronlar kulrang moddada to`p-to`p b`lib joylashadi, ular yadrolar deb ataladi. Orqa miya kulrang moddasi neyronlari ichida ildizcha hujayralar, ichki hujayralar va tutamli hujayralar farqlanadi. Ildizcha hujayralar (neuracytus reticularis) ga orqa miyaning hamma motaneyronlari kiradi. Ularning tanalari oldingi shoxlarda , yon shoxlardagi vegetativ markazlarda (lateral – oraliq yadro va orqa miyaning pastki segmentlarida – medial oraliq yadroda) joylashadi, aksonlari esa oldingi ildizcha tarkibida chiqib, orqa miya nervlarining harakatlantiruvchi qismini tashkil etadi. Ichki hujayralar (neuracytus internus) ning o`simtalari orqa miyaning bir segmenti sohasida kulrang moddadan tashqariga chiqmaydi va sinapslar hosil qilib tugaydi. Ular assotsiativ neyronlar hisoblanadi. Tutamli hujayralar (neuracytus funicularis) ning aksonlari tolalarning alohida tutamlari shaklida o`sha yoki qarama qarshi tomondagi oq moddaga o`tib, pastga tushadi yoki yuqoriga ko`tariladi hamda impulslarni orqa miyaning muayyan segmentlaridan uning boshqa segmentlari va bosh miyaning tegishli markazlariga olib boruvchi o`tkazuvchi yo`llarni hosil qiladi. Orqa miyaning kulrang moddasi uch xil multipilyar neyronlardan tashkil topgan. Neyronlarning birinchi turi filogenetik jihatdan eng qadimgisi bo`lib , kam sonli, to`g`ri va kuchsiz shoxlangan dendritlarga ega. Bunday neyronlar oraliq zonada ko`pchilikni taskil qiladi hamda oldingi va orqa shoxlarda uchraydi. Neyronlarning ikkinchi turi ko`p sonli kuchli shoxlangan dendritlar tutadi, ular o`zaro chatishib „ koptokchalar” hosil qiladi. Ular oldingi shoxlarning harakatlantiruvchi yadrolari hamda orqa shoxlar uchun xosdir . Neyronlarning uchinchi turi dendritning rivojlanish darajasiga ko`ra birinchi oldingi va orqa shoxlarda, orqa shoxning xususiy yadrosida joylashgan. Orqa shoxlarda g`ovak zona, jelatinsimon modda, orqa shoxning xususiy yadrosi va ko`krak (klark yadrosi) yadrolari farq qiladi. Orqa va yon shoxlar o`rtasida kulrang modda tasmalar hosil qilib

oq moddaga botib kirishi natijasida uning to`rsimon tuzilma nomini olgan, to`rga o`xshash yumshoq qismi hosil bo`ladi. Orqa shoxlarning g`ovak zonasi keng tarmoqli glial sinch bo`lib, unda ko`p miqdorda mayda oraliq neyronlar bor. Jelatinasimon moddada glial elementlar ko`pchilikni tashkil qiladi. Bu yerda nerv hujayralari juda kam va mayda bo`ladi. Orqa shoxlar diffuz joylashgan oraliq hujayralarga boy. Ular mayda multipolyar assatsiativ va komissural hujayralar bo`lib, ularning aksonlari orqa miya kulrang moddasining o`sha tomoni (assotsiativ hujayralar) yoki qarama qarshi tomoni (komissural hujayra) ichida tugaydi. G`ovak modda va jelatinasimon modda neyronlari hamda oraliq hujayralar mahalliy reflektor yoyini tutashtirib, orqa miya tugunlarining sezuvchi neyronlari va orqa miya oldingi shoxlarining harakatlantiruvchi neyronlari o`rtasidagi aloqalarni ta`minlaydi. Orqa shoxning o`rtasida orqa shoxning xususiy yadrosi joylashadi. U oraliq neyronlardan tashkil topgan. Ushbu hujayralarning aksonlari oldingi oq to`siq orqali orqali orqa miyaning qarama – qarshi tomonidagi oq moddaning yon ustunchasiga o`tadi, bu yerda ventral orqa miya – miyacha va orqa miya – talamik o`tkazuvchi yo`llar tarkibiga qo`shiladi va miyacha hamda ko`ruv do`mbog`i tomon yo`naladi. Doprsl yadro (klark yadrosi) kuchli shoxlangan dendritlar tutgan yirik oraliq neyronlardan tashkil topgan. Ularning aksonlari o`sha tomondagi oq moddaning yon ustunchalarioga o`tadi va dorsal orqa miya – miyacha yo`li (Fleming) tarkibida miyachaga ko`tariladi. Oraliq zonada medial, oraliq va lateral oraliq yadrolar farqlanadi. Medial oraliq yadro neyronlarining aksonlari o`sha tomondagi ventral orqa miya – miyacha yo`liga qo`shiladi. Yon shoxlarda joylashgan lateral oraliq yadro simpatik reflector yoyining assotsiativ neyronlari guruhidan iborat. Ushbu neyronlarning aksonlari simpatik harakatlantiruvchi tolalari bilan birgalikda orqa miyadan oldingi ildizchalar tarkibida chiqadi va simpatik stvol tarmoqlarining oq biriktiruvchi tarmoqlari sifatidan ulardan ajralib turadi. Oldingi shoxlarda orqa miyaning eng kata neyronlari joylashgan, ular tanalarining diametri 100 – 150 mkm bo`lib, yirik yadro tutadi. Yonshoxdagi yadrolarning hujayralari kabi bu neyronlar ham ildizcha hujayra bo`lib, ularning aksonlari oldingi ildizchalar nerv tolalarining asosiy qismini tashkil etadi. Aralash orqa miya nervlari tarkibida ular periferiyaga yo`naladi va skelet mushaklarida harakat nerv oxirlarini hosil qiladi. Ushbu yadrolar somotomotor markazlaridir. Oldingi shoxlarda harakat neyronlarining medial va lateral guruhlari yaqqol farqlanadi. Medial guruh hujayralari tana va umurtqa mushaklari ishini boshqaradi va orqa miyaning butun uzunligi bo`ylab yaxshi rivojlangan. Lateral guruh bo`yin hamda bel sohasidagi bo`rtmalarda joylashadi va qo`l hamda oyoq mushaklatrini innervatsiya qiladi.

Orqa miya neyrogliyasi – orqa miya kanali epindimogliya bilan qoplangan, u orqa miya suyuqligini hosil qilishda va aylanishida ishtirok etadi. Eprndimotsitlarning

periferik oxiridanbitta uzun o`simta chiqadiva orqa miyaning barcha qavatlaridan o`tib, uning tashqi chegaralovchi membranasi tarkibiga kiradi. Kulrang modda sinchining asosiy qismini protoplazmatik va tolali astrotsitlar taskil qiladi. Tolali astratsitlarning o`simtalari kulrang moddadan tashqariga chiqadi va biriktiruvchi to`qima elementlari bilan birgalikda oq moddadagi to`siqlarni hamda qon tomirlar atrofida va orqa miyaning yuzasidagi glial pardalarni hosil qilishda ishtirok etadi. Oligodendroglia hujayralari nerv tolalarining tarkibiga kiradi. Mikroglia orqa miyaga qon tomirlarining unga o`sib kirishi orqali tushadi va kulrang hamda oq moddaga tarqaladi. Orqa miyaning oq moddasi bo`ylama yo`nalgan, asosan miyelinli nerv tolalari va neyrogliyaning yig`indisidan iborat. Nerv sistemasining turli qismlarini bir-biri bilan bog`lab turuvchi nerv tolalarining tutamlari orqa miyaning o`tkazuvchi yo`llari deb ataladi. Kulrang moddaning shoxlari va glial to`siqlar oq moddani uch juft: orqa, yon va oldingi ustunchalarga ajratadi. Orqa ustunchalar bir-biridan orqa to`siq bilan ajralgan va asosan yuqoriga ko`tariluvchi yo`llardan iborat. Yon ustunchalarda yuqoriga ko`tariluvchi va pastga tushuvchi tolalar deyarli teng miqdorda bo`ladi. Oldingi ustunchalar o`rtasida chuqur oldingi yoriq bo`lib, ushbu ustunchalar tarkibidagi o`tkazuvchi yo`llar asosan pastga tushuvchi yo`llar hisoblanadi.

Yoshga ko`ra o`zgarishlari. Chaqaloq orqa miya nerv tizimi boshqa qismlarga nisbatan yaxshi rivojlangan. Tug`ulishiga yaqin orqa miya kanali erkin yuzasi kiprik tutuvchi endimotsitlar bilan qoplangan. Bu kipriklar 5 yoshga yetganda yo`qoladi. Makro va mikroglialar shakllanishi 6 oylikda tugaydi. Chaqaloqlarda orqa miyaning hamma yadrolari mavjud bo`lib neyrotsitlari mayda, ular pigment tutmaydilar. Chaqaloqlar nerv tolalarining miyelinlanishi kattalarga nisbatan ancha sust bo`ladi. Miyelinizatsiya jarayoni 2 – 3 yoshga kelib yakunlanadi. Afferent tolalarda bu jarayon efferent tolalarga nisbatan tez boradi. Piramida yo`li tolalari 2 – 3 oylikda kata yoshdagilarga o`xshab qoladi. Yon tutam tolalari miyelinizatsiyasi 4 yoshga kelib yakunlanadi. Spinal gangliylar organizmning ko`p qismidan nerv impulslarini orqa miyaga olib keladi. Shuning uchun uning jarohati tashqaridan keladigan sezgini pasaytirishi yoki umuman otkazmasligi mumkin. Orqa miyada ko`p orttirilgan yoki tug`ma kasalliklar uchraydi Tug`ma kasalliklar ko`proq nerv nayining taraqqiyoti bilan bog`liq. Bolalarda ko`p vaqt orqa miya churrasi uchraydi. Katta odamlarda spinal suyuqlik miqdori 150 ml atrofida bo`ladi va xar 4 – 7 soatda yangilanib turadi. Bir sutkada 500 mlgacha suyuqlik ishlanadi. Suyuqlik tarkibida natriy, xlor, kaliy elementlari ko`p bo`ladi. Suyuqlik ko`proq to`r qavatda so`riladi.

Patologik kasalliklari. Orqa miya patologik kasalliklari inson salomatligida jiddiy nevrologik muammolarni keltirib chiqaradigan murakkab kasalliklar guruhini tashkil etadi. Ular turli etiologik omillar – travma, degenerativ jarayonlar, yallig`lanish va

infeksiya, o'sma hamda qon tomir kasalliklari natijasida yuzaga keladi. Ushbu kasalliklar klinik jihatdan sezuvchanlik buzilishi, mushak kuchsizligi, harakat cheklanishi va tos a'zolari faoliyatining izdan chiqishi bilan namoyon bo'ladi. Travmatik shikastlanishlar ko'pincha yo'l-transport hodisalari, balandlikdan yiqilish yoki sport jarohatlari oqibatida yuzaga keladi. Ko'ndalang shikastlanish falaj, reflekslarning yo'qolishi, siydik va ichak faoliyatining buzilishi bilan kechadi, ezilish va gematomalar esa orqa miyaning qon aylanishini buzib, tezkor nevrologik simptomlarni keltirib chiqaradi. Bunday holatlarda immobilizatsiya, jarrohlik va reabilitatsiya muhim ahamiyatga ega.

Degenerativ kasalliklar asosan yoshi katta odamlarda uchraydi. Disk prolapsi nerv ildizlarini siqib, bel og'rig'i va radikulyar simptomlarni keltiradi. Servikal spondiloz qo'l-oyoqda uyquchanlik va mushak kuchsizligiga sabab bo'ladi, umurtqa kanal stenozisi esa paraparez va yurish buzilishiga olib keladi. Davolash konservativ usullar – fizioterapiya va dori vositalari – hamda og'ir holatlarda jarrohlikni o'z ichiga oladi. Yallig'lanish va infeksiyon kasalliklar orasida araxnoidit, xo'ppoz va transvers mielit alohida o'rin tutadi. Araxnoidit orqa miya pardalarining qalinlashishi va radikulyar og'riqlar bilan kechadi, xo'ppoz yiringli jarayon bo'lib, isitma va progressiv paraparezni keltirib chiqaradi, transvers mielit esa virus yoki bakteriyalardan keyin rivojlanib, sezuvchanlik va harakat buzilishiga olib keladi. Davolash antibiotiklar, kortikosteroidlar va ba'zan jarrohlik drenajni talab qiladi. Orqa miyada uchraydigan o'smalar ichki, yuzaki va epidural bo'lishi mumkin. Ichki o'smalarga astrositoma va epindimoma, yuzaki o'smalarga meningioma va neyrofibroma, epidural o'smalarga esa metastaz, lipoma va limfoma kiradi. Ular og'riq, motor va sensor buzilishlar hamda tos a'zolari disfunktsiyasi bilan namoyon bo'ladi. Davolash jarrohlik, kimyoterapiya va radiatsiya terapiyasini o'z ichiga oladi. Qon tomir kasalliklari orasida gemangioma, arteriovenoz malformatsiya, ishemik insult va gemorragik jarayonlar uchraydi. Ular qon aylanish buzilishi, kramp og'riqlar, sezuvchanlik va harakat buzilishlariga sabab bo'ladi. Davolash endovaskulyar obliteratsiya va simptomatik terapiya yordamida amalga oshiriladi. Metabolik va boshqa kasalliklar ham orqa miyada patologik jarayonlarni keltirib chiqarishi mumkin. Masalan, B12 vitamini yetishmovchiligi kombinatsiyalangan degeneratsiya, ataksiya va paraparezga sabab bo'ladi. Radiatsion miyelopatiya radiatsiya terapiyasidan keyin oq va kulrang modda nekrozi bilan kechadi, OITS bilan bog'liq miyelopatiyalar esa surunkali paraparez va ko'rish buzilishi bilan namoyon bo'ladi.

Umumiy klinik belgilarga bel og'rig'i, sezuvchanlik buzilishi, motor buzilishlar va avtonom disfunktsiyalar kiradi. Erta tashxis qo'yish va kompleks davolash usullarini qo'llash bemorlarning hayot sifatini yaxshilashda muhim ahamiyat kasb etadi.

Shuningdek, profilaktika choralariga amal qilish – og‘ir yuk ko‘tarmaslik, to‘g‘ri jismoniy faollik va vitaminlar qabul qilish kasalliklarning oldini olishda katta rol o‘ynaydi.

XULOSA. Orqa miya anatomiyasi va gistologiyasi uning murakkab tuzilishini, nerv tolalari va hujayra qatlamlarining o‘zaro uyg‘un faoliyatini ko‘rsatadi. Ushbu tuzilma organizmning harakat, sezuvchanlik va vegetativ funksiyalarini ta‘minlaydi. Orqa miyaning patologik kasalliklari esa turli etiologik omillar – travma, degenerativ jarayonlar, yallig‘lanish, infeksiya, o‘sma va qon tomir kasalliklari natijasida yuzaga kelib, bemor hayot sifatini keskin pasaytiradi. Klinik belgilarning xilma-xilligi va og‘irligi tashxis qo‘yishda zamonaviy instrumental usullarni qo‘llashni talab etadi. Shu bois, orqa miya kasalliklarini o‘z vaqtida aniqlash, kompleks davolash va profilaktika choralarini ko‘rish nevrologik sog‘liqni saqlashda muhim ahamiyat kasb etadi. Anatomik va gistologik bilimlar patologik jarayonlarni chuqurroq tushunishga yordam beradi, bu esa klinik amaliyotda samarali tashxis va davolash strategiyalarini ishlab chiqishda asosiy manba bo‘lib xizmat qiladi.

FOYDALANILGAN ADABIYOTLAR

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**EFFECTIVENESS OF SIMULATION-BASED TRAINING IN THE
DEVELOPMENT OF LAPAROSCOPIC SURGERY SKILLS****Batirov D.Y., Rakhimov A.P., Allanazarov A.X.,
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Relevance: In recent years, laparoscopic surgeries have been widely used in clinical practice and have gained particular importance due to reduced rehabilitation time and a lower rate of complications in patients. However, the successful performance of laparoscopic surgical procedures requires a high level of psychomotor skills, visuomotor coordination, and spatial thinking from the surgeon [1,2]. The development of practical skills based on the traditional “mentor—trainee” model is associated with a number of challenges, including patient safety concerns, limited operative time, and the risk of errors [3]. In this regard, simulation-based training technologies are considered an integral part of modern surgical education [4,5].

Materials and Methods: This study was conducted at the Urgench State Medical Institute within the framework of the implementation of the driver innovative project “Improving the effectiveness of developing skills in high-tech surgical interventions among surgeons of the Lower Amu Darya region” (Appendix 7a, item 109), in accordance with the Resolution of the President of the Republic of Uzbekistan No. 307 dated July 6, 2022, “On organizational measures for the implementation of the Strategy for Innovative Development of the Republic of Uzbekistan.”

The study was carried out in 2024—2025 at the training and simulation center. The development of practical skills in laparoscopic surgery was performed through the sequential use of the iModels box trainer, as well as the LAPARO Analytic and LAPARO APEX simulators.

A total of 265 participants of simulation training courses were included in the study. The age of the participants ranged from 23 to 45 years, with a mean age of 31.8 ± 4.6 years. In terms of gender distribution, 62% were male and 38% were female. The overall medical experience of the participants ranged from 1 to 15 years. Depending on their experience in laparoscopic practice, the participants were divided into three groups: **Group I** — participants with no prior experience in laparoscopy ($n = 112$, experience 1—3 years); **Group II** — participants who had assisted in laparoscopic

surgeries but had limited independent practice ($n = 93$, experience 3—7 years); **Group III** — participants with minimal independent experience in laparoscopic procedures ($n = 60$, experience 5—15 years).

Results: In Group I (no experience, $n = 112$), by the end of the training, the mean task completion time decreased by 38.6% ($p < 0.001$), while the number of technical errors was reduced by 42.1%. The overall integral performance score significantly increased compared to the baseline level.

In Group II ($n = 93$), after the Analytic stage, an improvement in movement accuracy and optimization of instrument trajectories was observed. In the APEX simulator, the performance of complex tasks improved by 29—33% compared to baseline values ($p < 0.01$).

In Group III ($n = 60$), despite initially high baseline performance, additional positive dynamics were recorded after simulation training in coordination, precision of dissection, and time efficiency ($p < 0.05$).

Conclusion: The obtained results confirm the effectiveness of a stepwise model of simulation-based training in the development of laparoscopic skills. In particular, the acquisition of basic skills using the iModels box trainer provided a solid foundation for subsequent analytical and advanced stages of simulation.

Objective indicators obtained from the LAPARO Analytic simulator played an important role in assessing the accuracy of movements and time efficiency of the trainees. The comprehensive scenarios of the LAPARO APEX simulator created an environment максимально close to real clinical practice, facilitating the simultaneous development of clinical thinking and technical proficiency.

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IMPROVING FORENSIC MEDICAL EXAMINATION ACTIVITY IN SOLVING CRIMES: ON THE EXAMPLE OF THE FORENSIC BIOLOGY DEPARTMENT

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**State Experts of the Republican Scientific and Practical Center of Forensic
Medical Examination and its Surkhandarya Branch**

The role of forensic medical examination bodies in the timely and complete detection of crimes is invaluable. Especially in crimes such as murder, infliction of bodily harm, theft, rape, and sexual assault, the identification of biological evidence is of great importance. Therefore, improving the efficiency of forensic medical experts and enhancing laboratory activities is one of the urgent tasks.

Expert examinations are carried out in accordance with the requirements of the Criminal Procedure Code (CPC) of the Republic of Uzbekistan. According to Article 203 of the CPC, circumstances such as the origin, reliability, ownership, and intended use of material evidence must be comprehensively examined.

Material evidence of a biological nature is submitted to the laboratory based on a decision to appoint a forensic medical examination.

Analysis of the Activities of the Forensic Biology Department

The activities of the forensic biology department play an important role in solving crimes in the Surkhandarya region. The department staff identify, preserve, and analyze material evidence using modern laboratory methods.

The following are examined as biological material evidence: blood, hair, saliva, semen, sweat, skin fragments, and other biomaterials. Their physicochemical properties and biological origin are determined using advanced laboratory techniques.

According to the results of expert examinations, it was established that in 2019 – 17, in 2020 – 23, and in 2021 – 14 minor girls became victims of sexual assault. This indicates the high social danger of such crimes and further increases the importance of forensic biological examinations.

Out of 54 examinations conducted in the department, 9 were completed within 1–10 days, 13 within 11–20 days, and 32 within 21–30 days.

In addition, all 54 examinations conducted based on forensic medical referrals were completed within the prescribed time limits.

According to the analysis results, laboratory activities generally ensure that examinations are completed within the established deadlines. However, in some cases,

the extension of examination periods up to 21–30 days may be due to the large workload and limited technical resources.

Actions aimed at concealing or destroying traces of crimes are also being uncovered through laboratory analyses. This demonstrates the strategic importance of the forensic biology department in criminalistics.

Forensic medical examination, especially the activities of the forensic biology department, plays a decisive role in solving crimes. Scientific analysis of biological material evidence contributes to a complete and fair investigation of crimes. Statistical data show that expert examinations are being carried out systematically.

At the same time, the efficiency of this field can be further improved through the wide introduction of modern technologies and the enhancement of organizational measures.

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ОНКОЛОГИК КАСАЛЛИКЛАРДА ХИМИЯТЕРАПИЯНИНГ БУЙРАКЛАРГА САЛБИЙ ТАЪСИРИ.

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Урганч давлат тиббиёт институти.**

Мавзунинг долзарблиги: бугунги кунда онкологик касалликлар ичида самарали усул сифатида химиятерпаия усули ривожланган бўлиб, даво муолажаларидан кейин организмдаги буйракларга салбий таъсир қилиб келмоқда.

Бу таъсирлардан бири – организмдаги буйракларга бўладиган зарарлардир, яъни химиотерапевтик препаратлар организмга кирганда, улар бир қатор салбий таъсирлар кўрсатиши мумкин, шу жумладан буйракларнинг функциясига ҳам. Жумладан, токсик таъсир. Бу ўз навбатида химиотерапевтик препаратлар баъзида буйраклардаги шишлар ва захарланишлар билан боғлиқ бўлади. Улар буйракларнинг гломерулаларини, яъни буйракнинг асосий фильтрация механизмлари захарлаши ёки бу органнинг бошқа тўқималарини зарарлаши мумкин. Шунингдек, гидратация (сувсизланиш) ва электролитлар балансининг бузилиши. Бунда химиотерапия даврида организмда сувсизланиш ва электролитлар балансининг бузилиши буйракларнинг ишлашини қийинлаштириши мумкин. Бу ҳолат химиотерапевтик препаратлар билан бирга, юқори дозалардаги даволаш ёки узоқ давом этиши ҳамда юқори ҳарорат ва худди шунга ўхшаш ҳолатларга боғлиқ бўлиши мумкин.

Ишнинг мақсади: ишнинг мақсади сифатида Урганч шаҳрида яшовчи онкологик касалликлар билан касалланиб химиятерапия олган беморлар ўрганилди.

Олинган натижалар: онкологик касалликга учраган беморларнинг кўпчилигида нефротоксик таъсир кузатилган, яъни буйрак тўқималарига захарли таъсир қилиши, буйракнинг фильтрация тизимини, шунингдек гломерулалар зарарланиши, организмнинг сувсизланиши ва электролитлар балансининг бузилиши кузатилган.

Хулоса: хулоса ўрнида шуни айтиш мумкинки, химиятерапиянинг буйракларга токсик таъсири турли даражада бўлиши ва бу таъсирлар баъзи ҳолларда ўлимга олиб келиши мумкин. Шу сабабли, нефротоксик таъсир қилувчи препаратларни врач назорати остида олиш, сувни кўп ичиш, диетани тўғри танлаш, буйракларнинг фаолиятини доимий текшириш ва организмга тегишли

муаммоларга эрта ташхис қўйиш химиотерапиянинг салбий таъсирларини минималлаштиришда муҳим чоралар ҳисобланади.

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ARTIFICIAL INTELLIGENCE-ASSISTED DECISION MAKING IN CARDIAC SURGERY OUTCOMES

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Abstract: Artificial intelligence (AI)-assisted decision-making is increasingly transforming clinical practice in cardiac surgery, offering enhanced predictive accuracy, individualized risk stratification, and improved perioperative planning. This article explores the integration of machine learning algorithms and data-driven models in evaluating cardiac surgery outcomes, with a focus on their ability to analyze large-scale clinical datasets, including preoperative risk factors, intraoperative parameters, and postoperative recovery indicators. AI-based systems demonstrate significant potential in predicting surgical complications, optimizing operative strategies, and supporting surgeons in real-time decision-making processes. Furthermore, the study discusses current limitations such as data heterogeneity, algorithm interpretability, ethical considerations, and the need for robust clinical validation. The findings suggest that AI-assisted frameworks can substantially improve patient outcomes in cardiac surgery when effectively integrated into clinical workflows, while emphasizing the importance of human expertise in final decision-making.

Keywords: Artificial Intelligence, Cardiac Surgery, Clinical Decision Support Systems, Machine Learning, Surgical Outcomes, Risk Prediction, Predictive Analytics, Perioperative Management, Healthcare Informatics.

INTRODUCTION

Cardiac surgery represents one of the most complex and high-risk domains in modern medicine, where clinical decision-making directly influences patient survival and long-term outcomes. Despite significant advancements in surgical techniques, anesthesia, and perioperative care, variability in patient responses and the presence of multiple comorbid conditions continue to pose substantial challenges for clinicians. In this context, accurate risk assessment and timely decision-making remain critical for improving surgical success rates and reducing postoperative complications.

In recent years, artificial intelligence (AI) has emerged as a transformative technology in healthcare, particularly in domains requiring complex data interpretation and predictive modeling. AI-assisted decision-making systems, powered by machine learning and deep learning algorithms, are capable of processing large and heterogeneous clinical datasets, including electronic health records, imaging data,

laboratory results, and intraoperative monitoring parameters. These systems enable the identification of hidden patterns and correlations that may not be easily detectable through traditional statistical approaches.

Within cardiac surgery, AI-based tools have shown promising applications in preoperative risk stratification, intraoperative guidance, and postoperative outcome prediction. By providing data-driven insights, these technologies support surgeons in selecting optimal surgical strategies and anticipating potential complications. However, despite these advantages, the integration of AI into clinical practice also raises important concerns related to algorithm transparency, data quality, ethical considerations, and the necessity of maintaining human oversight in critical medical decisions.

Therefore, this study explores the role of artificial intelligence-assisted decision-making in improving cardiac surgery outcomes, highlighting both its potential benefits and current limitations in clinical implementation.

The application of artificial intelligence (AI) in cardiac surgery has introduced a new paradigm in clinical decision-making, where data-driven models complement traditional medical expertise. One of the most significant contributions of AI is in preoperative risk assessment, where machine learning algorithms analyze patient-specific variables such as age, comorbidities, cardiac function, laboratory results, and imaging findings. These models can predict the likelihood of complications such as mortality, stroke, renal failure, and postoperative infections with higher accuracy than conventional scoring systems.

During the intraoperative phase, AI-assisted systems contribute to real-time monitoring and decision support. Advanced algorithms process continuous physiological signals, including heart rate variability, blood pressure fluctuations, and oxygen saturation levels, to detect early signs of instability. In some experimental settings, AI-based robotic assistance and image-guided surgical systems have been utilized to enhance surgical precision, reduce human error, and optimize operative techniques.

In the postoperative period, AI plays a crucial role in monitoring patient recovery and identifying early warning signs of complications. Predictive analytics models can evaluate trends in vital signs and laboratory data to forecast conditions such as sepsis, atrial fibrillation, or organ dysfunction. This enables timely medical interventions, thereby improving patient survival rates and reducing hospital stay duration.

Another important aspect is the integration of AI into clinical decision support systems (CDSS). These systems assist cardiac surgeons by providing evidence-based recommendations derived from large-scale clinical datasets and previous surgical

outcomes. Such systems enhance decision consistency and reduce variability in clinical practice, especially in high-pressure surgical environments.

Despite these advantages, several challenges and limitations remain. Data quality and availability are major concerns, as AI models require large, diverse, and accurately labeled datasets to perform reliably. Additionally, the “black box” nature of some deep learning models limits interpretability, making it difficult for clinicians to fully understand how specific predictions are generated. Ethical issues, including patient privacy, data security, and accountability in AI-driven decisions, also require careful consideration.

Furthermore, the successful implementation of AI in cardiac surgery depends on effective collaboration between clinicians, data scientists, and engineers. Rather than replacing human expertise, AI should be viewed as a supportive tool that enhances clinical judgment. Continuous validation through clinical trials and real-world application is essential to ensure safety, reliability, and generalizability across different healthcare settings.

Overall, AI-assisted decision-making demonstrates strong potential to improve outcomes in cardiac surgery by enhancing accuracy, efficiency, and personalization of treatment strategies, while still requiring cautious and responsible integration into clinical practice.

Conclusion

Artificial intelligence-assisted decision-making has demonstrated significant potential in improving outcomes in cardiac surgery by enhancing the accuracy of risk prediction, supporting intraoperative monitoring, and optimizing postoperative patient management. The integration of machine learning and predictive analytics into clinical workflows enables more precise and individualized treatment strategies, which can lead to reduced complication rates and improved overall survival.

However, despite these promising advantages, the application of AI in cardiac surgery is still associated with several challenges, including issues related to data quality, model interpretability, ethical concerns, and the need for extensive clinical validation. These limitations highlight that AI should not replace clinical expertise but rather serve as a supportive tool to assist surgeons in making more informed decisions.

In conclusion, the future of cardiac surgery lies in the effective collaboration between artificial intelligence systems and human clinical judgment. With continued technological development and rigorous validation, AI-assisted decision-making is expected to become an integral component of modern cardiac surgical practice, ultimately improving patient outcomes and advancing the quality of healthcare delivery.

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SCIENTIFIC, AND PRACTICAL SPECIFIC FEATURES OF DEVELOPING RECREATIONAL TOURISM IN UZBEKISTAN.

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Аннотация: В данной статье рассматривается комплексная оценка развития рекреационного туризма с акцентом на выявление взаимодействия структурных элементов туристической инфраструктуры и макроэкономических факторов. В частности, в качестве основных детерминантов спроса на туристические услуги рассматриваются такие факторы, как транспортная инфраструктура, цифровые информационные системы, состояние окружающей среды и уровень доходов населения. Статья посвящена вопросам того, как эти факторы в своей взаимной интеграции определяют эффективность туристической системы и формируют динамику ее развития.

Ключевые слова: Узбекистан, рекреационный туризм, устойчивое развитие, современная экономика, транспортная инфраструктура, цифровая информация, состояние окружающей среды, факторы доходов населения, методологическая основа, эконометрическое моделирование, модель ARDL, интеграция, организационно-экономический механизм.

Abstract: This article focuses on the complex assessment of the development of recreational tourism, focusing on identifying the interaction of structural elements of tourism infrastructure and macroeconomic factors. In particular, factors such as transport infrastructure, digital information systems, environmental status and population income are considered as the main determinants of the demand for tourism services. The article is devoted to the issues of how these factors, in their mutual integration, determine the effectiveness of the tourism system and shape the dynamics of its development.

Keywords: Uzbekistan, recreational tourism, sustainable development, modern economy, transport infrastructure, digital information, environmental status, population income factors, methodological framework, econometric modeling, ARDL model, integration, organizational and economic mechanism.

The issue of sustainable development of recreational tourism in Uzbekistan requires a multifactorial and systematic approach in modern economic conditions.

Recreational tourism is not only a set of services related to recreation and health, but also a complex system that is closely related to the economy, transport, service provision, digital technologies, ecology and the well-being of the population. Therefore, the use of modern econometric modeling approaches, along with traditional statistical analysis methods, is of great importance in the scientific assessment of this area.

In a comprehensive assessment of the development of recreational tourism, the main attention is paid to identifying the interaction of structural elements of tourism infrastructure and macroeconomic factors. In particular, factors such as transport infrastructure, digital information systems, environmental status and population income are considered the main determinants of the and shape the dynamics of its development.

The methodological basis of the study is formed by two important areas of econometric modeling. First, the ARDL model based on time series is used to determine the dynamic relationship between elements of recreational tourism infrastructure and international tourist flows. This approach allows for a joint assessment of short-term fluctuations and long-term equilibrium relationships between variables. Second, the multivariate linear regression (LS) model is used to identify the main macroeconomic factors affecting the volume of tourism services, and the impact of transport, digitalization, ecology and income factors is assessed in a comprehensive manner. The joint use of these two approaches provides a significant scientific advantage in assessing recreational tourism. While the ARDL model allows for the identification of the time-lagged impact of tourism infrastructure, the LS regression model serves to identify the interrelationships of the main economic factors affecting the volume of tourism services. As a result, tourism development is comprehensively analyzed in relation not only to infrastructure factors, but also to the macroeconomic environment.

As part of the study, an integrated organizational and economic mechanism was proposed to ensure the sustainable development of recreational tourism in Uzbekistan. This mechanism is based on the interrelated consideration of infrastructure factors, macroeconomic determinants and management tools affecting the tourism sector within a single system.

As the first component, macroeconomic factors are of particular importance. The level of income of the population, the development of digital technologies (level of Internet use) and the environmental situation are the main factors shaping the overall demand for tourism services. While an increase in income expands the population's opportunities to use tourist services, digitalization processes ensure the convenience

and openness of tourism services. Ecological factors are considered an important factor determining the attractiveness of recreational areas. As a result, under the influence of these factors, the initial demand for tourism is formed.

The second component is the infrastructure block, which is the main mechanism that converts the formed demand into a real tourism flow. This block includes transport infrastructure, cultural tourism facilities and recreational facilities. While transport infrastructure ensures the accessibility of tourists to the regions, cultural and recreational facilities form the main content of the tourist product. The results of econometric analysis also confirm that it is these factors that have the most significant impact on tourism flows. Therefore, the infrastructure block is considered a “practical driver” of tourism development.

The third component is an organizational mechanism that ensures the effective functioning of the entire system. Within this mechanism, public-private partnerships (PPP), tourism clusters and cooperative relations are considered the main tools. These management instruments serve to develop infrastructure facilities, attract investment flows and strengthen cooperation between tourism entities. As a result, the institutional efficiency of the tourism system increases.

An important aspect of the proposed mechanism is that all components are interconnected and work as a single system. In particular, the demand formed through macroeconomic factors is transformed into a real tourism flow through the infrastructure, and the organizational mechanism coordinates and supports this process. At the same time, an increase in tourism flows can have a positive effect on economic growth and create new demand in the future. This indicates the presence of a dynamic and self-stimulating mechanism in the system.

The proposed integrated organizational and economic mechanism provides a comprehensive approach to the development of recreational tourism and allows achieving sustainable development based on the integration of infrastructure, economic factors and the management system. This model is of scientific and practical importance in the strategic development of the tourism sector in Uzbekistan and serves as an important methodological basis for improving tourism policy.

The organizational mechanism acts as a “coordinating institution” in the economic system. It manages the flow of investment, ensures the efficient use of resources and strengthens ties between tourism entities. As a result, the development of infrastructure accelerates and the flow of tourism steadily increases.

The integrated working mechanism of the model The main logical chain of this model is expressed as follows:

Macroeconomic factors → Demand formation → Infrastructure → Tourism flow.

At the same time:

✓ Organizational mechanism → Infrastructure → Tourism flow

This indicates the two-way operation of the model:

➤ top-down (demand → supply)

➤ bottom-up (management → development)

The most powerful aspect of the dynamic effect (self-developing system) model is its dynamic nature. An increase in tourism flow increases economic activity, which in the future leads to an increase in income and the formation of new demand.

As a result, the following closed cycle occurs:

✓ Tourism flow ↑ → Income ↑ → Demand ↑ → Infrastructure ↑ → Tourism

This is also confirmed by the inertia (lag) effect identified in the econometric model. That is, the development of tourism in the previous period also has a positive effect on the next period. This means that the system has a self-stimulating and sustainable development.

The database consists of indicators and outcome variables representing the main structural elements of the recreational tourism infrastructure, which are systematized as follows:

➤ (Number of international tourists) - a dependent variable, representing the flow of international tourists entering the country and is considered the main indicator of the development of recreational tourism.

➤ (Accommodation infrastructure) - reflects the number of hotels, guest houses and other accommodation facilities.

➤ (Information infrastructure) - reflects the development of Wi-Fi points, information centers and digital services.

➤ (Transport infrastructure) - characterizes the availability of tourist vehicles and interregional mobility.

➤ (Catering infrastructure) - includes the number of restaurants, cafes and other catering facilities.

➤ (Cultural tourism infrastructure) – reflects theaters, cultural heritage sites, folklore and handicraft activities.

➤ (Recreational tourism infrastructure) – represents recreation areas, ecotourism and wellness facilities.

These variables were selected as the main economic and institutional factors affecting tourism flows, allowing for a comprehensive assessment of recreational tourism infrastructure.

General description of data dynamics Analysis of the data in the table shows that during the study period, a positive growth trend was observed for almost all indicators. In particular, the number of international tourists (Number of International Tourists) increased over time, and although there was a sharp decrease in some periods (the pandemic period in 2020), rapid recovery and growth dynamics were noted in recent years.

Infrastructure indicators also increased significantly. In particular, the annual increase in the number of accommodation infrastructure (Accommodation Infrastructure), information infrastructure (Information Infrastructure), and cultural and recreational facilities indicates an increase in the volume of investments in the tourism sector. In particular, the rapid development of transport infrastructure (Transport Infrastructure) and information infrastructure (Food Infrastructure) has significantly expanded the convenience and accessibility of tourism services.

The use of this database in econometric analysis allows the use of modern econometric modeling methods in assessing the development of recreational tourism. In particular, based on this data, which has a time series nature:

- The dynamics of variables over time is analyzed;
- Seasonality and cyclical fluctuations are identified;
- The short- and long-term relationship between infrastructure factors and tourism flows is assessed.

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ПОЛИХИМИЯТЕРАПИЯДАН КЕЙИНГИ БЕМОРЛАРДА БУЙРАКЛАРНИНГ ПАТОЛОГИК ЎЗГАРИШЛАРИ.

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Урганч давлат тиббиёт институти.**

Мавзунинг долзарблиги: Жаҳонда полихимиятерапия асоратларини минималлаштириш, онкологик беморларни даволашда оптимал даво тактикасини танлаш энг долзарб масалалардан бир бўлмоқда. Кимётерапия нефротоксикликни ривожланиш хавфи билан боғлиқ бўлиб, у ўткир тубулали шикастланиш, ўткир тубулоинтерстициал нефрит, гломеруляр шикастланиш билан намоён бўлиши мумкин. Дори воситаларининг токсиклиги дозага ва улардан фойдаланиш частотасига боғлиқ. Платина ўз ичига олган дорилар, метотрексат, фосфамид ва унинг ҳосилалари каби дорилар ДНКга зарар этказиш, ҳужайранинг энергия захиралари миқдорини камайтириш, ҳужайра ичидаги ионлар мувозанатини ўзгартириш, реактив кислород турларини синтез қилиш орқали проксимал ўралган тубулалар эпителийсига бевосита токсик таъсир кўрсатади.

Ишнинг мақсади: Полихимиятерапия билан даволанган Урганч шаҳрида яшовчи беморларда юзага келган буйрак зарарланишларида клиник лаборатор, морфологик, морфометрик, иммуногистокимёвий жихатларини ўрганиш.

Олинган натижалар: беморларда буйрак функциясининг ёмонлашиши, протенурия ва буйрак гипертензиясининг пайдо бўлиши, клиник-лаборатор таҳлилларда креатинин ва мочевина ортиши, протенурия ва микроальбуминуриянинг пайдо бўлиши, буйрак нефронларида ёпишиш ва интрстициал тўқимадаги яллиғланиш белгиларининг пайдо бўлиши, буйрак хажмининг кичрайиши, буйрак тўқимасида иммунологик бузалишлар аниқланди.

Хулоса: хулоса ўрнида шуни айтиш мумкинки, **клиник натижаларда** беморларда буйрак функциясининг бузилиши, гипертензия, протеинурия ва шишлар каби симптомлар кузатилди. Бу белгилар полихимиотерапиянинг салбий таъсири натижасида пайдо бўлди. **Лаборатор натижаларда** креатинин ва мочевина даражалари ортиши, протеинурия ва микроальбуминуриянинг пайдо бўлиши буйрак функциясининг бузилишига ишора қилди. **морфологик натижаларда** буйрак биопсиялари ёки микроскопик текширувлар натижасида интерстициал яллиғланиш, нефрит ва бошқа патологиялар аниқланди.

морфометрик натижаларда Буйрак ҳажмларининг кичрайиши ва нефронлардаги ишлаб чиқаришни бошқарувчи структуралардан ўзгаришлар кузатилди. **иммуногистохимик натижаларда** буйрак тўқимасида иммунологик ўзгаришлар, жумладан антиген ва антитела реакцияларининг ўзгариши аниқланди. Шу билан бирга, полихимиотерапиянинг буйракка бўлган таъсирини камайтириш учун эрта диагностика, даволашнинг самарадорлиги ва мониторинг жараёнларини кучайтириш муҳим аҳамиятга эга. Бу натижалар полихимиотерапиянинг буйракдаги салбий таъсирларини аниқлаш ва даволашда янги усуллари ишлаб чиқишга асос бўлади.

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MAIN PRINCIPLES AND ARTISTIC FEATURES OF POSTMODERN LITERARY POETICS

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ABSTRACT. This article scientifically analyzes the formation, developmental stages, and historical foundations of the postmodern literary movement. It also highlights the main artistic features of postmodernism and its role in translation theory. The research comprehensively examines the linguistic, cultural, and pragmatic aspects of this movement.

KEYWORDS: Postmodernism, literary movement, fragmentation, intertextuality, irony, deconstruction, polysemy, translation theory, adequacy, equivalence, linguopragmatics, cultural context.

INTRODUCTION. Postmodernism, which emerged in the second half of the twentieth century, is considered one of the most significant movements that brought a radical shift in literature. This movement opposed the rigid principles of modernism and promoted freedom, pluralism, and interpretative openness. Postmodern literature is distinguished by such features as fragmentation, intertextuality, irony, and polysemy. This phenomenon stimulated the development of new approaches not only in literary studies but also in translation theory. In particular, preserving the cultural context, conveying implicit meanings, and recreating stylistic features have become important issues in the translation of postmodern texts.

MAIN PART. In this study, a comprehensive approach was employed to examine the formation, developmental stages, historical roots of the postmodern literary movement, as well as its significance in translation theory. The methodological foundation of the research was primarily based on the historical-literary method, since the factors that led to the emergence of postmodernism as a stage following modernism, together with its developmental directions in the second half of the twentieth century and the beginning of the twenty-first century, were analyzed within a framework of historical continuity. In addition, the comparative-typological method was used to identify similarities and differences between postmodern tendencies in American and Uzbek literary contexts. This approach made it possible to evaluate postmodernism not as a fixed model, but as a set of poetic strategies manifested differently across various

national literary systems. Structural-semantic and poetic analysis methods were applied to reveal such characteristics as fragmentation, intertextuality, irony, discursive multilayeredness, and generic hybridity within literary texts. Furthermore, the linguopragmatic approach occupied an important place in the research, since issues related to the reinterpretation of implicit meanings, cultural codes, stylistic play, and authorial strategies in the translation of postmodern texts were considered among the major problems of translation theory. Interpretative, contextual, and adequacy-based approaches were also employed in formulating conclusions related to translation theory. Thus, the study aimed to investigate postmodernism not merely as a historical-literary phenomenon, but also as a complex aesthetic and semantic system that requires a specific approach in the process of translation.

As a result of the research, it was determined that the development of the postmodern literary movement passed through several important stages. In the first stage, the crisis of modernist aesthetic norms was observed, and the concepts of a single center, a single truth, and a rigid artistic order gradually weakened. In the second stage, postmodernism emerged as an independent artistic-aesthetic system in which fragmentation, intertextuality, deconstruction, irony, and polysemy became stable poetic devices. In the third stage, postmodernism evolved into a transnational cultural phenomenon that entered different literary systems and manifested itself in forms integrated with local cultural, historical, and linguistic characteristics. The study demonstrated that while technological acceleration, the expansion of information flows, and mediatization constitute central factors in American postmodern prose, in the Uzbek literary context postmodern elements are more closely connected with the complex relationship between tradition and modernity, the transformation of authorial position, and multilayered cultural consciousness. From the perspective of translation theory, it was revealed that postmodern texts cannot be fully transferred through the principle of simple equivalence alone; rather, adequacy, interpretative activity, and cultural adaptation become dominant priorities. Consequently, it was concluded that when working with postmodern texts, the translator must recreate not only linguistic units, but also the internal play of the text, its symbolic layers, implicit references, and stylistic complexity.

During the analysis, it was observed that the essence of the postmodern literary movement is primarily connected with skepticism toward metanarratives and the relativization of artistic integrity. This condition is reflected in literary texts through the disruption of traditional plot structures, the fragmentation of time and space, and the competition of multiple discourses within a single text. In postmodern texts, meaning is not presented in a fixed or complete form; rather, it emerges as a system

that is collected, interpreted, and reconstructed by the reader. In this regard, fragmentation was evaluated not only as a formal technique, but also as an aesthetic model of perceiving reality. Intertextuality, in turn, functions as a mechanism that connects a text with other texts, codes, and cultural signs, thereby transforming the postmodern work into an open system. In American postmodern literature, these features are more often expressed through systemic complexity, media references, and paranoid interconnections, whereas in Uzbek literary experience they appear mainly at the intersection of national consciousness, historical memory, and contemporary individual experience. Analyses related to translation theory demonstrated that restricting translation only to the denotative meaning of language reduces the quality of translation in postmodern texts. This is because irony, stylistic shifts, intertextual references, and semantic ambiguity carry the primary poetic function in such works. Therefore, when translating postmodern literature, the translator must simultaneously function as a linguist, literary scholar, and interpreter. For this reason, postmodernism was analyzed in translation theory as an important direction that forms a complex model of textual recreation, transmission of multilayered meanings, and intercultural mediation.

CONCLUSION. The results of the conducted research demonstrate that interpreting postmodernism solely as a phenomenon specific to Western literature would constitute a one-sided approach. Certain poetic strategies of postmodernism emerge in different national literatures on the basis of distinct historical and cultural foundations. Therefore, in evaluating postmodernism, it is important not to mechanically apply ready-made theoretical schemes, but rather to take into account the internal developmental logic of each literary system. The discussion revealed that the primary complexity of postmodern literature lies not only in its formal experiments, but also in the fact that its mechanisms of meaning production possess a multi-centered and open character. This, in turn, requires a reconsideration of traditional approaches within translation theory as well. In particular, when translating postmodern texts, the principle of finding an “exact equivalent” is not always sufficient, because textual play, irony, implicit quotations, and interdiscursive clashes often function not merely as linguistic units, but as cultural-semantic constructs. In this sense, the translator’s creative freedom and interpretative responsibility become significantly greater. Another important aspect is that the significance of postmodern literature in translation theory extends beyond the problem of translating complex texts; it also contributes to a new understanding of the relationships between text, author, reader, and translator. Thus, postmodernism not only enriches translation theory in practical terms, but also expands its theoretical boundaries. On this basis, it can be argued that the study of the

postmodern literary movement serves as an important scientific foundation for developing new methodological approaches, adaptation mechanisms, and principles of intercultural interpretation that are essential for translation studies.

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АНАЛИЗ АССОРТИМЕНТА ЛЕКАРСТВЕННЫХ СРЕДСТВ, ПРИМЕНЯЕМЫХ ПРИ ЛЕЧЕНИИ ЭПИЛЕПСИИ НА ФАРМАЦЕВТИЧЕСКОМ РЫНКЕ РЕСПУБЛИКИ УЗБЕКИСТАН

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Цель исследования. Изучить состояние и динамику ассортимента лекарственных средств, применяемых при эпилепсии (группа N03 по классификации АТХ), на фармацевтическом рынке Республики Узбекистан за 2023–2025 годы с выявлением тенденций по структуре производителей, широте МНН и лекарственным формам.

Материал и методы. Материалом исследования послужили сведения из трёх актуализированных срезов Государственного реестра лекарственных средств, изделий медицинского назначения и медицинской техники Республики Узбекистан: по состоянию на 24 ноября 2023 г., 1 октября 2024 г. и 14 ноября 2025 г. Из общего массива были отобраны препараты группы N03 («Противосудорожные средства»). Применялись методы ассортиментного анализа — оценка широты (число уникальных МНН), глубины (число торговых наименований на одно МНН) и обновляемости (появление новых МНН), а также сравнительный и структурный анализ по географии производителей и лекарственным формам.

Результаты исследования. Анализ реестра по состоянию на 24 ноября 2023 г. выявил 77 торговых наименований ПЭП, охватывающих 19 МНН. Лидировали по глубине карбамазепин — 15 позиций (19,5%), прегабалин — 14 (18,2%), вальпроевая кислота — 8 (10,4%). Отечественные производители Узбекистана представлены 15 препаратами (19,5%), страны СНГ — 11 (14,3%), дальнейшее зарубежье — 51 (66,2%), из них Индия — 24 наименования (47,1%). По лекарственным формам: таблетки — 44 (57,1%), капсулы — 26 (33,8%), растворы и сиропы — 7 (9,1%).

По состоянию на 1 октября 2024 г. ассортимент сократился до 71 торгового наименования (–7,8%) при сохранении широты 18 МНН. Ведущим по глубине остался карбамазепин — 17 позиций (23,9%), прегабалин — 12 (16,9%), вальпроевая кислота — 8 (11,3%). Доля отечественных производителей

составила 14 препаратов (19,7%); стран СНГ — 6 (8,5%), что на 5,8 п.п. ниже, чем в 2023 г.; дальнего зарубежья — 51 (71,8%), в том числе Индия — 25 (49,0% от зарубежных). Структура лекарственных форм практически не изменилась.

По состоянию на 14 ноября 2025 г. общее число зарегистрированных ПЭП снизилось до 51 торгового наименования (–28,2% к 2024 г.). Вместе с тем широта ассортимента возросла до 20 МНН: впервые в реестр включены эсликарбазепин и топирамат — противоэпилептические средства нового поколения. Карбамазепин сохранил лидерство по глубине — 12 наименований (23,5%), прегабалин — 8 (15,7%), леветирацетам — 5 (9,8%). Доля отечественных производителей составила 8 препаратов (15,7%), стран СНГ — 11 (21,6%), дальнего зарубежья — 32 (62,7%); Индия — 18 (56,3% от зарубежных). Доля таблеток выросла до 66,7%, капсул — 25,5%, растворов и сиропов — 7,8%.

Выводы. За 2023–2025 гг. глубина ассортимента ПЭП сократилась на 33,8% — со 77 до 51 торгового наименования, тогда как широта возросла с 19 до 20 МНН за счёт включения эсликарбазепина и топирамата. Иностранные производители стабильно занимают свыше 80% рынка, лидирует Индия. Доля отечественных предприятий снизилась с 19,5% до 15,7%, что подтверждает высокую импортозависимость данного сегмента и обосновывает необходимость государственной поддержки локального производства ПЭП второго и третьего поколений в Республике Узбекистан

AUSWIRKUNGEN VON SERVICE-QUALITÄT-INDIKATOREN IN DER GESUNDHEITSVERSORGUNG ORGANISATION, HUMAN RESOURCE MANAGEMENT-STRATEGIE

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Abstract: dieser Artikel untersucht die Auswirkungen des human resource management (hr-I) auf die service-Qualität Indikatoren Strategien im Gesundheits-Organisation. Das Ziel ist zu erkennen, welche der hr-Praktiken ich — Rekrutierung, training, motivation, Leistungsbeurteilung und Aufbewahrung — die meisten deutlich Einfluss auf die klinischen und Patienten-berichtete die Qualität der Ergebnisse. Die Forschung beschäftigt eine vergleichende Analyse und eine systematische Literaturübersicht von Studien von oecd-Staaten und Usbekistan. Ergebnis hinweisen, dass die umfassenden hr-Strategie, insbesondere in der beruflichen Weiterbildung und leistungsorientierte Anreize positiv verbunden mit einer hohen Patientenzufriedenheit, geringere Sterblichkeit, und reduziert medizinische Fehler nicht. Umgekehrt, fragmentierte Ansätze zu korrelieren mit meiner hr-Mitarbeiter burnout und niedriger Qualität erzielt. Den Abschluss bietet Empfehlungen für die undp als ein praktisches Werkzeug zur Verbesserung der Qualität der Stärkung der Gesundheitssysteme ich hr manager.

Keywords: human resource management, service-Qualität, Gesundheits-Organisation, performance-Indikatoren, die Zufriedenheit des Patienten und das Undp.

Einführung

Der service von Medizintechnik und Gesundheitswesen ist nicht nur bestimmt durch die Qualität der finanziellen Ressourcen, sondern auch durch das wissen, die Fähigkeiten und die motivation von Personal im Gesundheitswesen. Human resource management (hr-I) Strategie — einschließlich Rekrutierung, Schulung, performance evaluation, motivation und Mitarbeiterbindung — eine kritische service-Qualität Indikatoren, wie wenn das Spiel rolan Form Ihre Zufriedenheit des Patienten, klinische Ergebnisse, Sicherheit der Patienten und premium.

Schöne global healthcare systems face a common challenge: Personalmangel, professional burnout, die migration von qualifizierten Mitarbeitern und ski für die Geschwindigkeit, die kontinuierliche Aktualisierung von ipoll. Undp, reform des Gesundheitswesens, die Anstrengungen haben sich seit 2017 gehören die Veränderung in der Finanzierung und die Verwaltung, ein unterentwickeltes Gebiet des strategischen human resource management aber die rema. Viele medizinische administrative Organisation, die weiterhin mit top-down-Ansätze für die HR-Erbe der Sowjet-ära, mit den begrenzten Grad der motivation zur beruflichen Entwicklung oder die performance-based incentives. Im Gegensatz dazu, nachdem die Entwickler Länder wie Deutschland, Vereinigtes Königreich, und die Vereinigten Staaten haben eine lange und weltweit anerkannte gut-ich habe eine designer-hr-Strategie ist ein Treiber direkten service-Qualität. Hr-Praktiken-Forschung zeigt, dass Krankenhäuser mit robusten ich — wie beim regelmäßigen training, fair Leistung appraisal, Motivation, Teamarbeit und Mitarbeiter-Wohlbefinden-Programm — konsequent erreichen eine bessere Qualität Indikatoren, einschließlich der niedrigeren postoperativen Mortalität, weniger Medikationsfehler, und eine hohe Patientenzufriedenheit erzielt.

In dieser Studie befassen sich mit den folgenden Forschungsfragen:

1. Ich weiß nicht, was ist die Beziehung zwischen spezifischen hr-Strategie, die Komponenten (Rekrutierung, training, motivation, Beurteilung, Aufbewahrungs-und service-Qualität Indikatoren, Gesundheits-Organisation?
2. Hr-Praktiken, von denen ich die stärkste Evidenz für die Verbesserung der Qualität?
3. Welche Lektion kann ich lernen aus internationalen Erfahrungen als eine Verbesserung der Qualität Instrument zur Stärkung der Vereinten Nationen (undp) hr?

Material und metho nicht

Forschungsdesign Dieser Studie ist es, basierend auf einer systematischen Literaturrecherche und vergleichende Analyse der peer-review-Artikel in der oecd-Bericht und der national health statistics. Die Veröffentlichung dieser Techniken in der Beurteilung von 2010 bis 2024.

Größe der Daten– die folgende Datenbank wurden durchsucht: PubMed, Scopus, Web of science, Google schot kannte, und die oecd-Statistiken-Datenbank. Die Kombinationen, die den Suchbegriff enthalten "human resource management", "Gesundheitswesen", "service-Qualität", "Patienten-Zufriedenheit", "die klinischen Ergebnisse,," "motivation der Mitarbeiter" und "Gesundheits-Organisation." Außerdem, der Bericht aus dem Ministerium für Gesundheitswesen der Republik Usbekistan (2017-2023) und der world health organization (who) wurden analysiert.

Einschlusskriterien– wenn Sie die Studien umfassen: (1) mindestens eine hr-Praxis in Einrichtungen des Gesundheitswesens meine untersucht werden; (2) die gemessenen mindestens einen service quality indicator (clinical, patient-berichtete, oder der Prozess-basiert); (3) die veröffentlicht wurden, in englischer oder russischer Sprache; (4) die Verwendung von quantitative, qualitative oder mixed-metho.

Ausschlusskriterien– Studien nach vorne Ihre schöne exklusive Finanz-management, Infrastruktur-oder Medizintechnik, um Ihre Verbindung ohne hr-wurden ausgeschlossen.

Die analytischen metho– hr-Praktiken in fünf thematische Synthese verwendet wurde, um die Gruppe in meiner domain: Personalbeschaffung und-Auswahl, aus-und Weiterbildung, Leistungsbeurteilung und feedback, motivation und Anreize (finanzielle und nicht-finanzielle), und retention-Strategien. Qualitätsindikatoren wurden kategorisiert in drei Arten: klinische Endpunkte (Mortalität, Komplikationen, Wiederaufnahmen), patient-reported outcomes (Zufriedenheit, Erfahrung) und Prozess-Indikatoren (Wartezeiten, die Einhaltung der Richtlinien war dagegen).

Einschränkungen– die meisten high-quality Beleg stammt aus der high-eingehende Länder; Daten vom undp sim-und Schwellenländern sind begrenzt. Darf ich haben Ihre Favoriten Studien berichten positive hr bian Publication-quality association.

Ergebnis

Ich nicht hr-Strategie, die Komponenten und Ihre Verbreitung

Die systematische übersichtsarbeit identifiziert, 68 relevanten Studien. Hr Ausbildung und beruflichen Entwicklung waren die am häufigsten untersuchten in meiner Domäne (78% der Studien), gefolgt von motivation und Anreizen (65%), Leistungsbeurteilung (52%), recruitment (34%) und Aufbewahrung (28%).

High-eingehende Länder, integrierte hr-Strategien — wo mehrere Verfahren implementiert sind kohärent — norm. Im Gegensatz, hr, my lovely in die Organisation der Regel fragmentiert healthcare app undp Ansätze: zentrale Rekrutierung, assessment, ohne die Notwendigkeit, obligatorische

Weiterbildung, Betriebszugehörigkeit-basierte Gehälter links mit schwacher Leistung und hohe Fluktuation, besonders seine Jungen amo Krankenschwestern und ärzte.

Zusammenhang Zwischen hr-Strategien und service-Qualität Indikatoren

Ausbildung und berufliche Entwicklung– die zwölf Studien, einschließlich der beiden großen meta-Analysen gefunden, die verbunden sind mit einer continuous professional development program 24-32% reduction in medication administration error, eine 28% Reduktion im Krankenhaus erworbene Infektion, und die Zufriedenheit der Patienten ist deutlich hoher erzielt (Steigerung von 0,7 auf mich ein 5-Punkte-Skala).

Leistungsbeurteilung und feedback– Sieben Studien berichteten, dass eine regelmäßige Konstruktive Leistung feedback verbessert die Qualität der klinischen Dokumentation Vollständigkeit linkedin zu Ziel (von 35-40%), die Einhaltung klinischer Leitlinien vor (22%), und reduziert unnötige diagnostische Tests (von 15-18%).

Motivation und Anreize– Finanzielle Anreize (Boni für Qualität mit dem Ziel) zeigte gemischte Ergebnisse: Sie verbessern die Prozess-Maßnahmen (z.B. die Bildschirm-rate nicht), kann aber untergraben die intrinsische motivation. Nicht-finanzielle Anreize, Anerkennung, Karriere Möglichkeiten, Autonomie und unterstützende Führung — ist nachhaltiger und zeigte starke Assoziation mit patient-centered quality indicators.

Personalbeschaffung und-Auswahl– Beweise beschränkt ist, sondern legt nahe, dass value-based recruitment (wählen Sie für Ihre Mitarbeiter in Abstimmung mit der Organisation Qualität-Kultur) reduziert Umsatz-und verbessert die team-basierten Maßnahmen zur Qualitätssicherung.

Retention-Strategien– starke Kontinuität der Pflege ist im Zusammenhang mit den niedrigeren schöne hohe Fluktuation, hohe Rückübernahme Preise und niedrigere Patienten Vertrauen. Interventionen wie beim mentoring-Programm, flexible Terminplanung und Karriere-Wege reduziert Umsatz von 18-25% in fünf längsschnittstudien.

Vergleichende Indikatoren: Usbekistan und Deutschland

Die folgende Tabelle vergleicht die ausgewählten meinen Dienst -, Personal-und Qualitäts-Indikatoren zwischen Usbekistan und Deutschland (die neuesten verfügbaren Daten).

Kennzeichen	Deutschland	Usbekistan
Ärzte pro 1.000 der Bevölkerung,	4.5	2.8
Krankenschwestern pro 1.000 der Bevölkerung,	13.2	5.4
Stunden jährliche Weiterbildung-Arzt (ich bin ich)	85	24
performance-based pay-Bestandteile (in % des salar)	12-18%	<3%
Nursiz turnover rate (jährliche, %)	9%	23%
Patienten - Zufriedenheit (out of 10)	8.2	6.7

Medikationsfehler pro 1,000 patient-days	2.1	8.4
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Größe: OECD (2023), WER (2023), Ministerium für Gesundheitswesen der Republik Usbekistan (2023)

Verein Statistik

Korrelationsanalyse zeigte eine Gepoolte aus den Studien:

- Ich bin eine hr-Strategie Vollständigkeit score (0-10) und die Zufriedenheit der Patienten: $r = 0.68$ ($p < 0,001$)
- Die Komplikationsrate und das klinische Personal training Stunden pro Jahr: $r = -0.54$ ($p < 0,01$)
- Frequenz-performance-Prüfung und Einhaltung der Richtlinien: $r = 0.61$ ($p < 0,001$)
- Krankenhaus Rückübernahme rate und Fluktuation rate: $r = 0.49$ ($p < 0,05$)

Diskussion

Interpretation der Ergebnisse

Das Ergebnis ist nicht eine Strategie, die konsequent zeigen eine human-resource-management-administrative-support-Funktion, sondern ein entscheidender Faktor für den healthcare-service-Qualität. Ich behandle die hr-Organisation, die strategisch auszurichten, haben die Rekrutierung, Ausbildung, Prüfung, motivation und retention-Ziele rund um Qualität — erreichen Sie deutlich bessere Ergebnisse across clinical, patient-berichtete-und Prozess-Indikatoren.

Der stärkste Beweis für die **kontinuierliche berufliche Weiterbildung** und **nicht-finanzielle motivation** (Anerkennung, Autonomie, Karriere progression) als die wirkungsvolle hr-Praktiken I. Finanzielle Anreize crowd out intrinsic motivation, wenn Sie sind nicht genug, allein und sogar kontraproduktiv, professionelle — suchen Sie ein im Einklang mit Ihren Selbstbestimmung theo Organisation in der Psychologie.

Savage in der Welt meine hr-Indikatoren zwischen Usbekistan und Deutschland ist Auffällig. Deutschlands nursiz niedrigeren Umsatz (9% vs. 23%) und eine hohe Trainingsintensität (85 vs. 24-Stunden jährlich) erklären Sie den Unterschied im schönen Hafen wie eine wesentliche patient safety outcomes (Medikationsfehler: 2.1 vs. 8.4 pro 1,000 patient-days). Dies legt nahe, dass hr ist nicht nur eine Kosten für die Einwanderer, sondern investiere ich in hoch-Rendite-Verbesserung der Qualität, wahrscheinlich diese.

Qualität Mechanismen zur Verknüpfung Ihrer hr ich

Quality service wirkt sich nicht erklären, wie drei miteinander verbundene Wege der hr-Strategie I:

1. **Weg Kompetenz**– sicherstellen, dass Mitarbeiter die notwendige Ausbildung und die Auswahl der klinischen Wissens und technischen Fähigkeiten zu entwickeln, die Verbesserung der Haftfähigkeit und die Verringerung der Fehler lovely direkte Evidenz-basierten Leitlinien waren dagegen.
2. **Weg Motivation**, Leistungsbeurteilung, feedback, Anerkennung und faire Anreize zur Steigerung der Mitarbeiter-engagement, diskretionären Aufwand, und der patient muss an die Klasse, die zur Verbesserung der Patienten-Erfahrung und reduziert die Versäumnisse in der Pflege.
3. **Aufbewahrung Weg**– bewahrt geringe Fluktuation team zusammenhält, implizites wissen und Kontinuität der Beziehungen zwischen Patienten und Anbietern, die verbessert die Bewältigung chronischer Krankheiten und Patienten Vertrauen.

Wenn Sie das highway pathways sich gegenseitig verstärken, wenn Sie schaffen einen positiven Kreislauf: bessere hr I → hochwertige → Zufriedenheit mit einem großartigen Personal → niedrigeren Umsatz → weitere Verbesserung der Qualität.

Implikationen für Usbekistan

Undp Gesicht die Besondere Herausforderung: eine zentralisierte, seniority-based system salar; begrenzte Fonds für Ihre kontinuierliche berufliche Entwicklung; hohe Fluktuation nursiz; schwache verbindungen zwischen Leistungsbeurteilung und die Qualität der Ergebnisse. Basierend auf die Beweise, die folgenden Empfehlungen sind vorgeschlagen:

1. **Die Struktur invest in continuing medical education (in cm)** – übergang von passiven vorlesungen zur simulation-based training, klinische audit-und peer-review. Erhöhung der jährlichen Schulung Stunden gegenüber dem OECD - Durchschnitt.
2. **Die Einführung der performance-basierten, nicht-finanzielle Anreize**– die clinical excellence awards, öffentliche Anerkennung, Karriere-Wege für Krankenschwestern, klinische Autonomie und gewähren Sie Ihre high-performing team.
3. **Stärkung der performance-appraisal-Systemen**– Implementieren regelmäßige (vierteljährliche) Qualität feedback-Gespräche konzentrierten sich auf das Ziel, nicht, dass die Verwaltungs-compliance. Verwenden Sie Objektive Qualitätsindikatoren (Einhaltung der Richtlinien, die Zufriedenheit des Patienten und die Fehler-rate).
4. **Retention systematisch-Adresse nursiz**– Pilot-mentoring-Programm für neue Krankenschwestern, flexibler Planung und klare Wege zu nursiz oder nursiz mit der Rolle der Erzieher.
5. **Mein national quality framework Entwickler hr**– alle hr-Praktiken in der Organisation adopt a minimum standard für die Gesundheitsversorgung der Bevölkerung -, linkedin-und facility-Akkreditierung Fonds.

Wichtig ist, nicht ändern Sie den Missbrauch nicht erfordern massive finanzielle Investition. Viele wirksame Maßnahmen — Programm zur Anerkennung, die Struktur feedback, Karriere Wege — niedrig-Kosten, sondern erfordern leadership-Engagement und kultureller Wandel.

Studie Einschränkungen und zukünftige Forschungsrichtungen

Diese Studie hat einige Einschränkungen. Erste, die meisten high-quality Beleg stammt aus der high-eingehende Ländern; die verallgemeinerbarkeit der Ergebnisse erfordert eine sorgfältige Usbekistan kontextuelle Anpassung. Zweitens, die überprüfung konnte keine Daten enthalten, die möglicherweise enthalten unveröffentlichte Studien relevant oder internen Krankenhaus-Bericht. Dritte, kausale Inferenz ist begrenzt, da die meisten Studien überprüft sind Querschnitte oder klonale entfernen-Fach-experimentelle; mehrere vorhanden sind, in der randomisierten Studie hr-controller für meine Forschung.

Zukünftige Forschung sollte sich auf: (1) longitudinale Studien zu etablieren, kausale Zusammenhänge zwischen bestimmten Interventionen und Qualität im Gesundheitswesen-Organisation ich hr Usbekisch Veränderung; (2) mixed-metho hr-Forschung die Erkundung der Hindernisse, die ich wollte, zu reformieren (z.B., Haltung, Führung, Ressourcen-Einschränkungen, regulatorische Hindernisse); (3) Kosten-Effektivitäts-Analysen Vergleich verschiedener hr-Strategien; (4) die Validierung von meine Bewertung für die Bereitstellung von usbekischen hr-Kontext.

Fazit

Diese Studie zeigt, dass human-resource-management-Strategie hat einen erheblichen, messbaren Einfluss auf die service-Qualität Indikatoren im Gesundheitswesen Organisation. Ausbildung und berufliche Entwicklung von nicht-finanziellen motivation, Struktur, performance appraisal, und retention-Strategien zeigen die stärkste Assoziation mit besseren klinischen Ergebnissen, eine hohe Patientenzufriedenheit und verbessert die Sicherheit der Patienten.

Der Vergleich zwischen hr-Praktiken und-Leistung in Deutschland und in Usbekistan ist eine wilde zeigt meine s Qualitätsindikatoren, was darauf hindeutet, dass die reform des Gesundheitswesens ist eine dringende Priorität für Alter, wenn ich in Usbekistan ist hr-Systeme zu stärken. Die fragmentierte, mein Ansatz ist geerbt von der administrativen hr wird nicht lange ausreichend, um mir die moderne low-asset-Qualität standard.

Continuing medical education beinhalten praktische Vorschläge für den ausbau Usbekistan, die Einführung von nicht-finanzielle Anreize, performance appraisal Stärkung der Qualität mit Fokus seiner piloti nursiz retention-Programm und die Entwicklung einer nationalen Qualitätsrahmen für die Personalabteilung habe ich. Budgets erfordern nicht unbedingt die Autobahn ändern jedoch nicht die Nachfrage, savage s strategic leadership, cultural change und Erhalter Engagement.

Ultimate schön, aber nicht so austauschbar, wie die Gesundheits-Organisation ist der Ansicht, dass die Qualität des Personals Ressource prima Fahrer — und accord-manager strategisch lovely — wird konsequent übertreffen diejenigen, die dies nicht tun. Investieren Sie in Ihre Investition in Ihr human resource management, patient safety, clinical effectiveness, and patient würde.

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THE RELATIONSHIP BETWEEN MISSED ABORTION AND ENDOMETRITIS AND THE EFFECTIVENESS OF PREGRAVID PREPARATION

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Background. Missed abortion remains one of the leading causes of early reproductive loss and continues to be an important medical and social problem in modern obstetric and gynecological practice. According to the World Health Organization, a significant proportion of spontaneous pregnancy losses in early gestation is associated with impaired implantation and early embryogenesis. In recent years, chronic endometritis has attracted considerable attention as one of the major pathogenetic factors contributing to missed abortion. Persistent inflammatory changes in the endometrium are accompanied by impaired endometrial receptivity, microcirculatory disorders, cytokine imbalance, hormonal dysregulation, and disturbances in the microbiological status of the reproductive tract. Chronic inflammation negatively affects trophoblast invasion, chorionic development, and proper implantation of the fertilized ovum, significantly increasing the risk of recurrent reproductive failure. Therefore, the development of effective pregravid rehabilitation methods aimed at restoring the functional state of the endometrium is of great clinical importance.

Objective. To investigate the relationship between missed abortion and chronic endometritis and to evaluate the effectiveness of vaginal ozone therapy as part of комплексной pregravid rehabilitation in women with a history of reproductive loss.

Materials and methods. The study was conducted at the Khorezm branch of the republican specialized scientific and practical medical center for mother and child during 2025–2026. A total of 96 women of reproductive age with a history of missed abortion were included in the study. Depending on the treatment modality, the patients were divided into three clinical groups. The first group consisted of 32 women with chronic endometritis after missed abortion who received standard anti-inflammatory and hormonal therapy. The second group included 34 patients with similar pathology who, in addition to standard treatment, underwent comprehensive pregravid rehabilitation with vaginal ozone therapy. The third group consisted of 30 practically healthy women with physiological pregnancies who served as the comparison group. All participants underwent comprehensive clinical and anamnestic evaluation, pelvic ultrasonography with assessment of endometrial thickness, and hormonal profiling including prolactin, progesterone, estrogens, thyroid-stimulating hormone, and anti-Müllerian hormone levels. Immunological evaluation included determination of IL-6 and anti-hCG antibody levels. Vaginal and cervical microbiota were assessed using Femaflor analysis, bacteriological culture, and PCR diagnostics.

Results. The study demonstrated that the majority of women with missed abortion had pronounced manifestations of chronic endometritis associated with complex hormonal, immunological, and microbiological disturbances. Women in the first and second groups showed significantly decreased progesterone levels, altered estrogen-prolactin balance, and elevated IL-6 concentrations, indicating

persistent inflammatory activity in the endometrium. Increased anti-hCG antibody activity was also detected, confirming the involvement of autoimmune mechanisms in implantation failure. Microbiological examination most frequently identified *Gardnerella vaginalis*, *Ureaplasma* spp., *Mycoplasma hominis*, and *Candida* spp., which were associated with chronic endometrial inflammation and reduced endometrial receptivity. Following treatment, positive clinical and laboratory dynamics were observed in both groups; however, the most pronounced improvement was noted in patients receiving vaginal ozone therapy. Women in the second group demonstrated faster restoration of endometrial structure, normalization of hormonal parameters, and reduction of IL-6 levels. Normalization of vaginal and cervical microbiota was achieved in 88.2% of patients receiving ozone therapy, compared to 58.1% in the standard treatment group. During the 6-month follow-up period, repeated pregnancy occurred in 79.4% of women treated with ozone therapy, whereas in the control group this rate was 55.6%.

Conclusions. Chronic endometritis is one of the major factors contributing to the development of missed abortion and is associated with significant hormonal, immunological, and microbiological disturbances. The inclusion of vaginal ozone therapy in комплекс pregravid rehabilitation promotes restoration of endometrial functional activity, normalization of the reproductive tract microbiota, and improvement of reproductive outcomes. The obtained results confirm the high clinical effectiveness of comprehensive rehabilitation in women with a history of missed abortion.

ФАРҶОНА ВИЛОЯТИ МИСОЛИДА МУДДАТИДАН ОЛДИН ЎЛИК ТУҒИЛГАН ЧАҚАЛОҚЛАР БУЙРАК УСТИ БЕЗИ ТЎҚИМАСИ ПАТОМОРФОЛОГИК ЎЗГАРИШЛАРИ

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Аннотация: Фарғона вилояти мисолида муддатида олдин ўлик туғилган чақалоқлар буйрак усти беши тўқимасини хомила ичи ривожланиш давридаёқ гиперфункцияси, пўстлоқ қавати тутамли соҳасидаги спангиоцитларни гипертрофияга учраши, цитоплазмасида липидли киритмаларни хаддан зиёд кўпайиши, капилярларда тўлақонлик ва диapedез қон қуйилиш ўчоқларини асосан 20-27 хафталик муддатда энг устун туриши нейроиммун тизимда ривожланиш энг юқори нуқтага етганлигини исботлайди.

Калит сўзлар: буйрак усти беши, иммунсупрессия, ўлик туғилган чақалоқ, патоморфология.

Муаммони долзарблиги: Дунё миқёсида перинатал ўлим кўрсаткич-лари тиббиётнинг ривожланишига қарамай, глобал тиббий-ижтимоий муаммо бўлиб қолмоқда. АҚШ ва Европа давлатларида ўлик туғилиш кўрсаткичи ҳар 1000 туғруққа 3,0–5,0 тани ташкил этса, МДХ давлатлари ва Россия Федерациясида бу кўрсаткич 5.5–9.0 тани ташкил этади. Ўлик туғилишнинг асосий сабаблари сифатида плацентар етишмовчилик, инфекциялар ва онанинг соматик касалликлари кўрсатилади. Бироқ, хомиланинг адаптив тизимлари — тимус (иммун тизим маркази) ва буйрак усти беши (эндокрин стресс-тизим) ўртасидаги морфофункционал дезинтеграция (алоқанинг бузилиши) муддатида олдин ўлик туғилишнинг патогенетик механизми сифатида етарлича ўрганилмаган. Фақат хориж ва ўзимиздаги олимларни ўрганишларида инфекцион омиллар билан боғлиқлиги келтирилган халос.

Марказий Осиё давлатлари билан қиёс (2024 й.) Минтақада кўрсаткичлар мамлакатларнинг соғлиқни сақлаш тизими ва иқтисодий ҳолатига қараб сезиларли даражада фарқ қилади: Қозоғистон республикасида бу кўрсаткич, 1000 та туғруққа 6,88-8,0 тани ташкил этса, Тожикистон республикасида 21,7-30,3 тани ташкил этганлиги аниқланди. Қирғизистонда бу кўрсаткич 1000 та туғруққа 11,6-24,5 тани ташкил этса, Туркманистон республикасида 35,9-40,3 тани ташкил этиб, Ўзбекистон республикасида бу кўрсаткич 12,2-18,2 тани

ташқил этади. Эслатиб ўтамиз, бу кўрсаткичлар бўйича Ўзбекистонда ўлик туғилиш 2019-2021 йилларда 30,4-41,8 тани ташқил этиб, Ўзбекистон Республикаси Президентининг қарори, 25.04.2022 йилдаги ПҚ-216-сонли қарорни кучга кириши оналик ва болалик муҳофазасига қаттиқ эътиборни қаратилиши ва чақалоқлар ўлим кўрсаткичини сезиларли даражада пасайишига олиб келганлиги билан ўз тасдиғини топади.

Натижа ва муҳокама: муддатдан олдин ўлик туғилган чақалоқлар аутопсиясида 69 та ҳолатдан 53 тасида буйрак усти безини меёрга нисбатан 21-30% га ошганлиги аниқланди. микроскопик жихатдан бу ўзгаришлар пўстлоқ қават тутамли сохаларида спангиоцитларни кескин гипертрофияси, цитоплазмасида липидли киритмаларни кўпайганлиги, ядролари йирик гиперхромли кўринишида, перинуклеар сохаларда эозинофил киритмаларни бўлиши, капиллярларда тўлақонлик ва диapedез қон қуйилиш ўчоқларини бўлиши, стромада ҳар хил даражада плазматик бўкиш белгиларини бўлиши аниқланади. Буйрак усти бези пўстлоқ қавати гломеруляр ва тутамли қават чегараларида қон томирларни нотекис тўлақонлиги, гломеруляр қаватда ҳали тўлиқ такомил топмаган коптокча шаклига ўхшамаган секретор эпителий хужайралар ноксимон узунчоқ кўринишида бўлиши, тутамли қаватда спангиоцитларни меёрга нисбатан катталашганлиги, цитоплазмасида секретор липидли киритмаларни ўрат ва йирик томчи кўринишида сақланишиЮ, кортизолга бўлган талабни ошиб кетганлиги билан изоҳланса, пўстлоқ соҳасида гломеруляр тузилмаларни шаклланмаганлиги, эса айнан стрессор омилларни танлаб таъсир қилганлигини исботлаши билан бирга, жараёнда кортизолга бўлган талабни ошиб кетганлиги билан изоҳланади. бу эса, айна, буйрак усти безидаги юқори функционал зўрқишлар асосан тутамли қаватдаги спангиоцитлар зиммасига юклатилганлигини тасдиқ-ловчи морфологик субстрати эканлигини исботлайди.

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СУРУНКАЛИ ОШҚОЗОН ЯРА КАСАЛИГИНИ УЗОҚ ДАВОЛАНИШИДА ЖИГАРДА ЮЗАГА КЕЛАДИГАН ГИСТОКИМЁВИЙ ЎЗГАРИШЛАР

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Аннотация: Сурункали ошқозон яра касаллигини узоқ вақт даволанишида жигарда юзага келадиган асосий гистокимёвий ўзгаришлар асосан, Раппопорт бўйича жигарни фаол майдонларида сийрак ва дағал фуксифил толаларни кўп миқдорда шаклланиши юзага келганлиги аниқланади. Бу беморларни ёшига ва жараёни давомийлигига боғлиқ ҳолда 45-59 ёшлиларда перипортал, перилобуляр жигар фиброзини юзага келганлигини англатиб, триадалар атрофида суст шаклланган лимфоцитар инфильтрация ўчоқлари билан намойиш бўлади. Ван Гизон усулида ўрганилганда, жигарни турли фаол майдонлари оралиғида синусоидларни деворида фибробластлар томонидан синтезланган тропоколлагенни коллаген фуксифил толага айлانганлиги ва ўтиш босқичларини бўлиши, жигар бўлакчалари чегарларида дағал толали тузилмаларни чеграси ноаниқлиги жигар циррозини такомил топаётганлигини тасдиқлайди.

Калит сўзлар: сурункали ошқозон яра касаллиги, гепатотоксик дистрофия, жигар циррози, гистокимёвий усул, Ван Гизон, морфология, некроз.

Муаммони долзарблиги: Ошқозон сурункали яра касаллиги (ОСЯК) ва унинг жигар тизимида таъсири нафақат маҳаллий, балки глобал миқёсдаги тиббий муаммодир. Дунё олимларининг қарашлари ва эпидемиологик кўрсаткичлар бу патологиянинг долзарблигини бир неча омиллар билан асослайди. Гарчи замонавий тиббиётда *H. pylori* эрадикацияси (йўқ қилиш) яхши йўлга қўйилган бўлса-да, статистика кўрсаткичларда ҳозиргача жигар фиброз ва склерози камайган балки кўпайганлигини англатади. Дунё аҳолисининг тахминан 5-10% ҳаёти давомида камида бир марта ошқозон ёки ўн икки бармоқ ичак яраси билан касалланади. Бу эса, жигар касалликларини юзага келишини индуцировчи омиллардан бири ҳисобланади. Тадқиқотларга кўра, ошқозон яраси бор беморларнинг 30-40% ида жигар ва ўт йўлларидаги ёки морфофункционал бузилишлари аниқланади. Жумладан АҚШ, ЕВРОПА ва БУЮК Британияда аҳолиларида ўртача, 10% аҳолисида ошқозон яра касаллигига аниқланиб, 10

минг киши ушбу касаллик асоратидан вафот этса, 500 минг кишида жигар склерози, циррозини турли даражалари ривожланганлиги аниқланган. Россия федерацияси ва МДХ давлатлари аҳолиси орасида бу кўрсаткич 1000 кишидан 7-14% да сурункали яралар аниқланса, 65-70% да *H. pylori* инфекцияси аниқланади.

Айнан, мана шу инфекцияни даволашда қўлланиладиган доривор препаратларни 75-80%да гепатоксик таъсирларини юқорилиги жигар стеатози, жигар фибрози, склерози, портал гипертензиясини юзага келтирувчи бирламчи сабаблардан бири хисобланади. МДХ давлатларида ошқозон сурункали яра касаллиги асорталаридан ўлим кўрсаткичи 1,1% ни ташкил этиб, асосий контингентлар эркак жинслилар бўлиб 18-44 ёшлиларда энг кўп тарқалганлиги аниқланди. Бу эса, муаммони долзарблиги ва заруратини тақозо этиши билан бирга, жигарда юзага келадиган иккламчи морфологик ўзгаришлар ҳақида кам маълумотлар келтирилган бўлиб, профилактик чора тадбирларни аксарияти клиник инструментал текширишлар асосида тайинланади. Бу эса, сурункали ошқозон яра касаллигида юзага келдиган жигардаги патоморфологик ўзгаришларни турли муддатлар баҳолаш мезонлари ишлаб чиқарилмаганлиги, жигардаги иккламчи дистрофик ва некробиотик ўзгаришлар бўйича клиник морфологик тавсияларни тўла тўқис ишлаб чиқарилмаганлигини англатади.

Натижа ва муҳокама: Сурункали ошқозон яра касаллигида жигардаги юзага келадиган ўзгаришларни гистокимёвий Ван Гизон усулида пикрофус-цин билан бўялганда аниқланадиган фуксинофил толаларни кўпайиши асосан триадалар атрофида, перилобуляр соҳаларда атрофида ингичка септал қатлам кўринишида аниқланиб, аксарият, традалар ва бўлакчалар периметрида чегара траекторияси текис бўлган, бўлакчалар бўшлиғига ўсиб кирмаган ва ўчоқлари текис тўқ контрастли кўринишида фуксинофил толалар аниқланади.

Бу жараёнда бириктирувчи тўқимани кўпайганлиги, таркиби бўйича 3- типдаги коллаген тола ва фуксинофил қизил рангда бўлиши жигарни турли экзо ва эндоген токсик зарарланиб турганлигини англатади. Бу эса, ўз навбатида, клиник анамнестик маълумотларда ностероид яллғиланишга қарши препаратларни қабул қилганлиги билан боғланади. Фуксинофил толаларни тарқалганлиги баҳолашда асосан қуйида келтирилган жадвалда тақдим этилган.

Тадқиқотда ўрганлаётган ошқозон сурункали яраларида даволанган ва турли асоратлардан вафот этганлар жигаридаги морфологик ўзгаришларни фиброзланиш даражасини баҳолаш мезонлари

Ривожланган морфологик бирликлар	METAVIR
Фиброз йўқ	F1
Бир нечта портал йўлларининг портал фибрози	F1
Кўпгина портал йўлларининг портал фибрози	F1
Бир нечта кўприксимон фиброз тўсиқлар	F1
Кўплаб кўприксимон фиброз тўсиқлар	F0
Тўлиқ шаклланмаган цирроз	F0
Тўлиқ шаклланган цирроз	F0
Жами тўпланган морфологик бирликлар бўйича балл	4 балл

METAVIR шкаласи бўйича 4 балл деб баҳоланганлиги аниқланиб, жараёнда фуksинофил толаларни кўпайиши асосан, Раппопрт бўйича, жигар триадалари атрофида жойлшаган гепатоцитларда йирик томчили ёғли дистрофияси ва мултифокал некрозда регенрацияга учрамаган гепатоцитлар ўрнида фибробластларни кўпайиши билан изохланади. Традалар атрофида мептал тўсиқларни ташкил этган, дағал толали тузилмлар оралиғида суст шаклланган оралик шишлар ўт томирларида ўт динамикасини секинлашишига ва иикламчи холестазларни юзага келганлигини англатади. Перилобуляр вена қон томирларида ўртача тўлалик. Ўт томирларида ўт суюқлиги аниқланмайди. Перилобуляр сохалар бўшлаб шаклланган фиброз тўқималарнинг чегараси аниқ, релефи текис контурлардан иборат бўлиб жараён асосан ташқаридан кирувчи токсик моддаларни киритилганда юзага келишини англатади.

Морфофункционал жихатдан бу ўзгаришлар давомли кечаётганлигини англатиб, таъсирловчи омиллар бартраф этилган репаратив регенерацияни кучайганлигини бохолашда ҳам мухим морфологик белгилардан бири хисобланади.

Хулосалар

Сурункали ошқозон яра касаллигини даволашда кейин гепатопротектор-ларини қўллаш заруратини тақозо этиб, гистокимёвий жихатдан жигар фиброзини давом этаётганлиги аниқланди. Бу микроскопик ўзгаришлар асосан даволаш жараёнида гепатопротекторлар қўллашда юқорида микроскопик ўзгаришларни олдини олишда мухим хисобланади.

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ТУҒРУҚДАН КЕЙИНГИ КЕЧГИ МУДДАТДА БАЧАДОНДАН ҚОН КЕТИШИДА ОШҚОЗОН ОСТИ БЕЗИ ЛАНГЕРХАНС ОРОЛЧАЛАРИДА ЮЗАГА КЕЛАДИГАН ПАТОМОРФОЛОГИК ЎЗГАРИШЛАР

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Аннотация. Туғруқдан кейинги кечги муддатда бачадондан қон кетишида ошқозон ости беши Лангерханс оролчаларида юзага келадиган патоморфологик ўзгаришлар дистрофик, некробиотик ўзгаришлар юзага келиб, ўткир эндокрин етишмовчилик ривожланиши билан давом этади. Бу эса, полиорган етишмовчилик кўринишида барча паренхиматоз аъзоларда оралиқ шишилар, диапедез қон қуйилишлар, гиалинли тромбларни шаклланиши билан намоён бўлади. Айнан хомиладор аёлларда ушбу ҳолатда қон глюкозани ошиб кетиши, хужайраларга ўтишини кескин қийинлашиши ва ткцрқдан кейинги тикланишни ўта оғир кечиши асосан барча паренхиматоз аъзоларни иикламчи алтреаияси билан намоён бўлади.

Калит сўзлар: ошқозон ости беши, туғруқдан кейинги бачадон ичи қон кетиши, оналар ўлими, некроз, дистрофия.

Муаммони долзарблиги: Дунё аҳолисида хомиладор аёлларда туғруқ-дан кейин турли сабабларга кўра бачадон ичи қон кетишларида оналар ўлимини асосий қисмини ташкил этиб, ЮНИСЕФ 2022 маълумотларига кўра, хомиладор аёллар ўлими 2022 йилда 301000 мингтани ташкил этган. Бу эса ривожланаётган давлатларда ушбу ўлим кўрсаткичи, 72,3% ни ташкил этади.

АҚШ ва Европа давлатларида оналар ўлими ўртача, 100 мингта хомиладор аёлларга 24 тани ташкил этса, Россия Федерациясида бу кўрсаткич 100мингтага 36,5тани, Азәрбайджан, Албания, Арманистон, Босния ва Герцеговина, Грузия, Туркия, Қирғизистонда бу кўрсаткич 100 мингтага 61,3 тани ташкил этса, Тожикистон ва Туркманистонда бу кўрсаткич юритил-маганлиги, Ўзбекистонда бу кўрсаткич 2022 йилда 100 мингтага 179 тани ташкил этганлиги аниқланган. Бу кўрсаткични яънада давом эттириш мумкин бўлиб, энг кўп оналар ўлими кузатиладиган давлатлар булар учинчи давлатлар ёки ривожланаётган, МДХ давлатларида юқори кўрсаткичлар билан характерланади.

Натижа ва муҳокама: Туғруқдан кейинги кечги муддатда бачадондан қон кетишида ошқозон ости беи Лангерханс оролчаларида юзага келадиган патоморфологик ўзгаришлар дистрофик, некробиотик ўзгаришлар юзага келиб, ўткир эндокрин етишмовчилик ривожланиши билан давом этади.

24 соатдан кейинги даврда ривожланган ўткир ошқозон ости беидаги ишемик ўзгаришларга энг чидамсўз бўлган хужайралар Лангерханс оролча-ларида оч ва тўқ хужайралар эканлиги аниқланди. 24-48 соат ичида дастлаб Лангерханс оролчаларини бўкиш ва оралиқ шишиларни шаклланганлиги, капиллярларда гиалинли тромбларни шаклланганлиги (ДВС синдроми оқибатида) ўткир некроз жараёнилари ҳам айнан ацинусларда эмас, балки Лангерханс оролчаларида аниқланганлиги кўп холларда ишемияга чидамсиз эканлиги, буйрак усти беи билан ўзаро интегратив боғлиқлигини издан чиққанлигини кўрсатди. Асосан ўткир ишемия жараёни дастлаб ошқозон ости беи бошчаси ва танасида ривожланиб дум соҳасида 72 соатдан кейин юзага келиши аниқланди. Микроскопик жихатдан Лангерханс оролчалари оч ва тўқ хужайралар цитоплазмасида гиалин томчили дистрофия асосан тўқ эозинофил киритмаларни тўпланганлиги билан намоён бўлиб, аксарият хужайраларда аниқланади. Некрозга учрган соҳаларда макрофаглар инфильтрацияси ва шу соҳадаги ацинусларда плазматик бўкиш ва некробиоз ўчоқларини такомил топганлиги аниқланди.

48-72 соат давомида ошқозон ости беи Лангерханс оролчаларида функционал ва хужайравий етишмовчилик саббали продуктивликни кескин камайиши микроскопик жихатдан оч цитоплазмали хужайраларни кескин камайиши, оралиқда интертсциал шишиларни яққол ривожланганлиги, массив некробиоз ва некрозга учрган эндокриноцитлар аниқланиб, капиллярларда стаз, сладж феномени ва плазматик бўкиш ўчоқлари аниқланади.

Хулосалар

1. Ўткир ишемия ва эндокрин етишмовчилик: Туғруқдан кейинги қон кетиши ошқозон ости беида ўткир ишемияни келтириб чиқаради. Бунинг оқибатида Лангерханс оролчаларида дистрофик ва некробиотик ўзгаришлар юзага келиб, ўткир эндокрин етишмовчилик ривожланади (р. 1).
2. Глюкоза миқдорининг ўзгариши ва дексаметазон таъсири: Қон йўқотишнинг илк 24 соатида глюкоза миқдори ва Лангерханс оролчалари функцияси пасаяди. Бироқ, даволаш жараёнида дексаметазон қўлланилиши натижасида қонда глюкоза миқдори кескин ошиб **кетиши (транзитор гипергликемия)** ва оролчалардаги хужайраларнинг иккиламчи шикаст-ланиши (некроз ва дистрофия) кузатилади.

3. Вақтга боғлиқ морфологик ўзгаришлар: Ошқозон ости безидаги ишемик ўзгаришлар вақт ўтиши билан кучайиб боради: 24 соат ичида асосан шиш ва камқонлик кузатилса, 24–48 соат оралиғида Лангерханс оролчаларида гиалинли тромблар ва ўткир некроз жараёнлари шаклланади. Ишемия жараёни дастлаб безнинг бошчаси ва танасида бошланиб, 72 соатдан кейин дум қисмига ўтади.

4. Полиорган етишмовчилигидаги ўрни: Ошқозон ости безининг функционал етишмовчилиги бошқа аъзоларнинг глюкозага бўлган эҳтиёжини қондира олмай қолишига (декомпенсация) олиб келади. Бу жараён туғруқдан кейинги қон кетишларда полиорган етишмовчилигини кучайтирувчи асосий омиллардан бири бўлиб хизмат қилади.

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MODERN METHODS OF HEALTHCARE QUALITY MANAGEMENT

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Annotation: This article examines modern methods of healthcare quality management and their role in improving the efficiency, safety, and effectiveness of medical services. The study highlights contemporary approaches such as evidence-based management, digital health technologies, patient-centered care, quality assurance systems, and continuous monitoring of healthcare outcomes. Special attention is given to the implementation of international standards and innovative management tools that contribute to enhancing healthcare service quality. The findings emphasize the importance of integrating modern management strategies to ensure sustainable development and better patient outcomes in healthcare institutions.

Keywords: Healthcare quality management, medical services, patient safety, quality assurance, healthcare systems, digital health, evidence-based management, patient-centered care, healthcare innovation, clinical effectiveness.

Introduction

Healthcare quality management is one of the most important components of modern medical systems, directly influencing patient outcomes, healthcare efficiency, and public trust in medical institutions. With the rapid development of medical technologies and the increasing complexity of healthcare delivery, traditional management methods are no longer sufficient to meet current healthcare demands. Therefore, the implementation of modern quality management methods has become essential for ensuring effective and safe patient care. Modern healthcare systems require continuous improvement, systematic evaluation, and the application of innovative management approaches. These include the use of digital technologies, standardized clinical protocols, performance indicators, and patient-centered strategies designed to optimize service delivery. Additionally, international healthcare standards and accreditation systems play a significant role in maintaining service quality and improving organizational performance. The purpose of this study is to analyze contemporary methods of healthcare quality management, evaluate their effectiveness, and identify their role in improving healthcare outcomes and institutional performance in modern medical practice.

Materials and Methods

This study was conducted using a comprehensive review and analytical approach focused on modern healthcare quality management systems. Scientific articles, healthcare policy documents, international guidelines, and reports published by leading organizations such as the World Health Organization and Joint Commission International were analyzed. The research included comparative evaluation of traditional and modern healthcare quality management methods, emphasizing evidence-based practices, digital healthcare technologies, accreditation systems, and patient-centered care models. Data were collected through literature review, case study analysis, and assessment of healthcare performance indicators such as patient satisfaction, treatment outcomes, safety standards, and institutional efficiency. Qualitative and comparative methods were applied to identify the most effective management strategies currently used in healthcare institutions worldwide.

Results

The study demonstrated that modern healthcare quality management methods significantly improve the effectiveness and safety of medical services. Implementation of digital technologies, including electronic health records and telemedicine platforms, was associated with increased operational efficiency and reduced medical errors. The findings also revealed that patient-centered care approaches enhanced patient satisfaction and treatment adherence. Healthcare institutions applying international quality standards and continuous monitoring systems showed better clinical outcomes, improved staff performance, and higher organizational productivity. Additionally, evidence-based management contributed to more rational decision-making and optimized resource utilization.

Discussion

The findings confirm that healthcare quality management has become a critical factor in the modernization of medical services. Traditional management approaches often fail to address the growing complexity of healthcare systems, making innovative and technology-driven strategies essential. Digital transformation has created new opportunities for improving healthcare delivery, although challenges such as staff adaptation, financial investment, and data security remain significant concerns. Patient-centered care models further strengthen healthcare systems by prioritizing individual needs and improving communication between patients and healthcare providers. Moreover, the integration of international standards and accreditation systems ensures accountability, transparency, and continuous quality improvement. Future healthcare management should focus on combining technological innovation, professional training, and evidence-based policy implementation to achieve sustainable healthcare excellence.

Conclusion

In conclusion, modern methods of healthcare quality management play a fundamental role in improving the effectiveness, safety, and sustainability of healthcare systems. The integration of innovative technologies, evidence-based management strategies, and patient-centered approaches has significantly enhanced healthcare service delivery and organizational performance. The study demonstrates that continuous quality improvement, implementation of international standards, and effective use of digital health tools are essential for addressing contemporary healthcare challenges. Furthermore, strengthening healthcare management systems contributes to better patient outcomes, reduced medical errors, and increased institutional efficiency. Future development of healthcare services should focus on innovation, professional development, and strategic quality management to ensure high standards of patient care worldwide.

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BOLALARDA YUVENIL PSORIATIK ARTRIT KECHISHINI BAHOLASH

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Annotatsiya: ushbu maqolada O'zbekiston sharoitida bolalarda yuvenil psoriatik artrit (YPA) kechishining klinik, laborator kechishini va maxalliy davolashni tahlil qilishni maqsad qilib oldik. Tadqiqot Respublika ixtisoslashtirilgan dermatovenerologiya va kosmetologiya ilmiy-amaliy tibbiyot markazining Qashqadaryo viloyat hududiy filialida 2024-2026 yil I-chorakda qabul qilingan psoriaz bilan kasallangan 49 nafar bemor bolalar ustida olib borildi.

Tadqiqotimizda psoriazdan oldin artrit rivojlanishi va progressiv kechishga moyilligi ayniqsa bemor bolalarga klinik tashxishlash kechikishi aniqlandi. Olilaviy poliklinika dermatolog shifikorlari va potranaj hamshiralari birgalikda uyda ko'rik, erta skrining joriy qilish, dermatolog va revmatolog hamkorligini kuchaytirish lozim.

Kalit so'zlar: Yuvenil psoriatik artrit, b-gemolitik streptokokk, bolalar, semizlik, entesit, daktilit, dermatolog.

ОЦЕНКА ТЕЧЕНИЯ ЮВЕНИЛЬНОГО ПСОРИАТИЧЕСКОГО АРТРИТА У ДЕТЕЙ

Аннотация: целью данной статьи является анализ клинико-лабораторного течения и местного лечения ювенильного псориатического артрита (ЮПА) у детей в условиях Узбекистана. Исследование проводилось на базе Кашкадарьинского областного филиала Республиканского специализированного научно-практического медицинского центра дерматовенерологии и косметологии с участием 49 детей, больных псориазом, госпитализированных в I квартале 2024–2026 гг.

В нашем исследовании было выявлено, что у детей-пациентов наблюдается тенденция к развитию артрита до появления псориаза, его прогрессирующее течение, и, в особенности, задержка клинической диагностики. Дерматологам и патронажным медсёстрам семейных поликлиник необходимо совместно проводить осмотры на дому, внедрять ранний скрининг и усиливать сотрудничество между дерматологами и ревматологами.

Ключевые слова: ювенильный псориатический артрит, β -гемолитический стрептококк, дети, ожирение, энтезит, дактилит, дерматолог.

ASSESSING THE COURSE OF JUVENILE PSORIATIC ARTHRITIS IN CHILDREN

Abstract: This article aims to analyze the clinical and laboratory course of juvenile psoriatic arthritis (JPA) in children, as well as its local treatment, within the context of Uzbekistan. The study was conducted on 49 pediatric patients with psoriasis who were admitted to the Kashkadarya regional branch of the Republican Specialized Scientific and Practical Medical Center of Dermatovenereology and Cosmetology during the first quarter of 2024-2026.

Our study revealed that the development of arthritis often precedes psoriasis and tends to follow a progressive course, particularly in pediatric patients whose clinical diagnosis is delayed. It is necessary for family polyclinic dermatologists and patronage nurses to jointly introduce home examinations and early screening, and to strengthen collaboration between dermatologists and rheumatologists.

Keywords: Juvenile psoriatic arthritis, B-haemolytic streptococcus, children, obesity, enthesitis, dactylitis, dermatologist.

Muammoning dolzarbligi: Yuvenil psoriatik artrit (YPA) — bolalarda uchraydigan surunkali yalligʻlanishli kasallik boʻlib, psoriaz bilan bogʻliq artrit shaklidir. U yuvenil idiopatik artrit (YuIA) spektriga kiradi va klinik polimorfizm bilan xarakterlanadi.

Soʻnggi yillarda global miqyosda YPA diagnostikasi va davolashida sezilarli yutuqlarga erishilgan boʻlsa-da, rivojlanayotgan mamlakatlarda, jumladan Oʻzbekistonda, kasallikning erta aniqlanishi dolzarb muammo boʻlib qolmoqda.

Bolalarda psoriazning eng koʻp uchraydigan trigger omillari quyidagilardir: streptokokk infeksiyasi (b-gemolitik streptokokk) bilan bogʻliq faringit, virusli infeksiyalar, stress, shikastlanish [1–5]. Psoriaz bilan kasallangan bolalarda koʻpincha ijobiy oilaviy anamnez qayd etiladi: kasallik 16 yoshgacha boshlansa – 50–70% holatda, 16 yoshdan keyin esa – 30% holatda [4]. Psoriazga chalingan kattalarning

taxminan 30–40 foizi kasallikning 16 yoshgacha boshlanganini ta’kidlaydi. Bolalarda psoriaz bilan kasallanishning 2 ta cho’qqisi ajratiladi: birinchisi – 6–7 yoshda, ikkinchisi (eng yuqorisi) – 14–17 yoshda.

Tadqiqot maqsadi: O‘zbekiston sharoitida bolalarda yuvenil psoriatik artrit (YPA) kechishining klinik, laborator va maxalliy davolashni tahlil qilish.

Tekshirish usullari va materiallari: Tekshiruv Respublika ixtisoslashtirilgan dermatovenerologiya va kosmetologiya ilmiy-amaliy tibbiyot markazining Qashqadaryo viloyat hududiy filialida 2024-2026 yil I-chorakda qabul qilingan psoriaz bilan kasallangan bemor bolalar ustida olib borildi. Tadqiqotda 1 yoshdan 18 yoshgacha bo‘lgan 49 nafar bemor bolalarda o‘rganildi.

Tadqiqotda retrospektiv va prospektiv kuzatuv asosida 2–16 yoshdagi bolalarda YuIA tashxisi qo‘yilgan bemorlar ichidan YPA holatlari tahlil qilindi. Klinik, laborator (ESR, CRP, ANA), instrumental (UTT, MRT) va funksional ko‘rsatkichlar baholandi.

Tadqiqot natijalari: Psoriazi bor bolalarning 60–80 foizida kasallik poliartritga o‘tadi. Daktilit bemorlarning 20–40 foizida uchraydi. Ijobiy ANA (antinuklear antitanachalar) profili kichik maktab yoshidagi bolalarda qayd etiladi. Pustulyoz psoriaz 1,0–5,4% hollarda, asosan o‘g‘il bolalarda kuzatiladi. Bolalarda kasallikning halqasimon turi eng ko‘p tarqalgan bo‘lib, uning prognozi ijobiy hisoblanadi [13].

O‘rta og‘ir darajadagi psoriazga chalingan bolalar (32%) va o‘smirlar (41%) orasida semizlik umumiy populyatsiyaga nisbatan ancha ko‘p uchraydi.

Ushbu guruhda psoriaz tana vazni me‘yorida bo‘lgan bolalarga qaraganda klinik jihatdan og‘irroq kechadi. Kattalardagi kabi, semizlikka chalingan bolalarda ham kasallikning og‘irlik darajasi kelajakda yurak-qon tomir patologiyalari xavfidan dalolat berishi mumkin. Yoshlikdagi semizlik hayot davomida psoriatik artrit rivojlanishi xavfini oshiradi [1, 2, 5].

Olib borilgan tadqiqot natijasida quyidagi tahlil natijalari olindi.

Demografik ko‘rsatkichlar

Qizlar: 62%

O‘g‘il bolalar: 38%

O‘rtacha yosh: $9,2 \pm 3,1$ yil

Kasallik boshlanishi

Oligoartikulyar: 68%

Poliartrikulyar: 22%

Spondiloartritga o‘xshash: 10%

Klinik xususiyatlar

Tizza va to‘piq bo‘g‘imlari zararlanishi — 74%

Daktilit — 28%

Entesit — 19%

Tirnoq o'zgarishlari — 35% aniqlandi.

Tadqiqot natijasida o'rganilgan bemor bolalarda 60% holatda psoriaz kechroq paydo bo'lganligi aniqlandi.

1-жадвал

Bolalarda yuvenil psoriatik artrit tashxisi mezonlari
16 yoshgacha bo'lgan bolalarda kasallik boshlanishi bilan terida psoriatik toshmalar kuzatilishi va 6 haftadan ortiq davom etuvchi persistirlovchi artrit
Toshmalar bo'lmaganda, quyida sanab o'tilgan belgilardan kamida ikkitasi mavjud bo'lishi:
1. Daktilit (sosiskasimon barmoqlar)
2. "Angishvona" belgisi va / yoki onixolizis ko'rinishidagi tirnoq distrofiyasi
3. Birinchi darajali qarindoshlarda psoriaz onixolizis (1-chiziqli qarindoshlarda psoriaz)

2-жадвал.

Bolalarda psoriazni mahalliy davolash	
Kasallikning yengil kechishi va cheklangan psoriazda (PASI < 10 yoki teri shikastlanishi maydoni 20% dan kam bo'lganda)	
Maxalliy davolash	
1. Keratolitik vositalar	Yoshiga qarab cheklangan zararlanish maydoniga 0,5-2% li salitsil malhami: • Emizikli yoshdagi bemorlarga - <5% • Ilk bolalik davri - <10% • Katta yoshdagi bolalar uchun - tana yuzasining <20%
2. Kasallikning zo'rayish bosqichida topikal steroidlar	• 2 yoshgacha - past darajadagi faollik • 2 yoshdan 12 yoshgacha - o'rtacha faollik darajasi • 12 yoshdan kattalar - yuqori darajadagi faollik
3. D vitamini analoglari (statsionar va regressiv bosqichlarda)	• 6 yoshdan 12 yoshgacha – malham va krem (haftasiga 50 mg) • 12 yoshdan kattalarga – eritma va loson (haftasiga 75 mg)

	Cheklangan psoriazda: boshning sochli qismi, kaftlar, oyoq panjalari, tirnoqlar
4. Keratoplastik vositalar	• 5% li salitsil malhami — 6 yoshdan boshlab qo'llaniladi • Ixtiol, qatron — 12 yoshdan boshlab qo'llaniladi
5. Kalsinevrin ingibitorlari	• 2 yoshdan boshlab – 1% li Pimekrolimus kremi va 0,03% li Takrolimus malhami • 15 yoshdan boshlab – 0,1% li Takrolimus malhami Torpid, chegaralangan psoriazda: yuz, burmalar, anogenital soha, tirnoqlar
6. Topikal retinoidlar	• 0,05% li tazaroten kremi Tirnoq psoriazi uchun
7. Mahalliy quvvatlovchi terapiya	• Tiklanish (rekonvalessensiya) davrida namlantiruvchi lipofil kremlardan foydalanish.
Izoh. UFB – ultrabinafsha B nurlanishi, O'NF-a – o'sma nekrozi omili-a, IL – interleykin.	

Xulosa: Bolalarda psoriaz tashxisini qo'yish ayrim hollarda dermatolog shifokor uchun qiyin vazifa bo'lib qolmoqda. Psoriaz bilan kasallangan bolalarda ko'pincha ijobiy oilaviy anamnez qayd etiladi, yuz, teri burmalari va anogenital soha ko'proq zararlanadi.

O'zbekiston sharoitida bolalarda yuvenil psoriatik artrit: Ko'pincha oligoartikulyar boshlanishi xos ekanligi aniqlandi. Tadqiqotimizda psoriazdan oldin artrit rivojlanishi va progressiv kechishga moyilligi ayniqsa bemor bolalarga klinik tashxishlash kechikishi aniqlandi. Olilaviy poliklinika dermatolog shifokorlari va potranaj hamshiralari birgalikda uyda ko'rik, erta skrining joriy qilish, dermatolog va revmatolog hamkorligini kuchaytirish lozim.

КАМЕРТОНАЛЬНЫЕ МЕТОДЫ ИССЛЕДОВАНИЯ СЛУХОВОЙ ФУНКЦИИ

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Аннотация: В данной работе рассматриваются камертональные методы исследования слуховой функции и их значение в современной диагностике нарушений слуха. Проведен анализ классических проб Ринне, Вебера и Швабаха, а также их сравнение с современными аудиометрическими методами. Установлено, что камертональные методы являются доступными, простыми и информативными способами первичного обследования пациентов с нарушениями слуха. Несмотря на развитие цифровых технологий, данные методы сохраняют свою практическую значимость в оториноларингологии.

Ключевые слова: Слуховая функция, камертональные методы, проба Ринне, проба Вебера, проба Швабаха, аудиометрия, тугоухость, диагностика слуха, оториноларингология, слуховой анализатор.

Введение

Актуальность темы

Нарушения слуха являются одной из распространённых проблем современной медицины. Ранняя диагностика слуховых расстройств позволяет своевременно начать лечение и предупредить осложнения. Камертональные методы остаются важным этапом первичного обследования пациентов.

Цель работы

Целью данного исследования является изучение диагностической ценности камертональных методов исследования слуховой функции, определение их роли в раннем выявлении нарушений слуха и оценка эффективности применения в современной клинической практике. Особое внимание уделяется сравнению классических камертональных проб с современными инструментальными методами диагностики слуха, такими как тональная аудиометрия.

Проблема исследования

Нарушения слуха занимают важное место среди заболеваний органов чувств и существенно влияют на качество жизни пациентов, их социальную адаптацию и способность к коммуникации. Одной из основных проблем современной оториноларингологии является необходимость своевременного выявления различных видов тугоухости. На ранних этапах заболевания требуется использование методов диагностики, которые являются быстрыми, доступными, простыми в применении и достаточно информативными. Несмотря на широкое внедрение современных цифровых технологий и аппаратных методов исследования, камертональные пробы продолжают использоваться в клинической практике благодаря своей доступности и возможности проведения первичной диагностики без сложного оборудования. Однако возникает необходимость оценки их эффективности и диагностической точности в сравнении с современными методами исследования слуховой функции.

Материалы и методы

Используемые методы

В исследовании использовались камертональные пробы:

- проба Ринне;
- проба Вебера;
- проба Швабаха.

Проведение исследования

Исследование проводилось среди пациентов с жалобами на снижение слуха, шум в ушах и нарушение восприятия речи в условиях ЛОР-отделения.

Результаты

Основные данные

Камертональные методы позволили определить наличие кондуктивной и нейросенсорной тугоухости.

Что показали методы

Проба Ринне помогла оценить воздушную и костную проводимость звука, а проба Вебера — определить сторону поражения слухового анализатора.

Сравнение результатов

Результаты камертональных проб в большинстве случаев совпадали с данными аудиометрии.

Анализ результатов

Камертональные методы являются простыми, доступными и информативными способами первичной диагностики слуховых нарушений.

Преимущества и недостатки

Преимущества:

простота;

быстрота выполнения;

доступность.

Недостатки:

меньшая точность по сравнению с современными аппаратными методами.

Значение исследования

Исследование подтверждает важность сочетания классических и современных методов диагностики слуха.

Заключение

Камертональные методы остаются эффективным способом первичного исследования слуховой функции. Они позволяют быстро выявлять нарушения слуха и определять тип тугоухости. Современные методы аудиометрии дополняют результаты камертональных проб и повышают точность диагностики. Перспективой является комплексное использование традиционных и цифровых технологий.

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GENRE AND POLEMICAL SPECIFICITY IN THE PUBLICISTIC WRITINGS OF THE ENGLISH ENLIGHTENMENT AND THE JADIDS OF CENTRAL ASIA

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Abstract. This thesis examines the genre and polemical specificity of publicistic writings in the English Enlightenment and Central Asian Jadid literature. The analysis focuses on Daniel Defoe, Jonathan Swift, Alexander Pope, Joseph Addison, Richard Steele, Mahmudkhoja Behbudiy, Abdurauf Fitrat, Abdulla Avloniy and Abdulhamid Chulpan. Although these writers belonged to different historical and cultural contexts, their works reveal a common reformist orientation. In both traditions, polemics functioned as a means of social criticism, moral education and intellectual renewal. English Enlightenment polemics was mainly expressed through the essay, pamphlet, periodical article, satire and poetic criticism. Jadid polemics developed through journalistic articles, dramatic dialogue, educational treatises, public appeals and reformist essays. The comparison shows that both traditions were united by the idea of enlightenment, but differed in genre form, social urgency and historical function.

Keywords: polemics, publicism, English Enlightenment, Jadidism, genre, pamphlet, essay, satire, reform, periodical press, Defoe, Swift, Pope, Addison, Steele, Fitrat, Avloniy, Behbudiy, Chulpan.

Introduction: The publicistic writings of the English Enlightenment and the Jadids of Central Asia developed in different historical periods. However, both literary traditions regarded the written word as a powerful means of social influence. In eighteenth-century England, the development of the press, journals and pamphlet literature created a new space for public discussion. Writers could now speak not only to a narrow

intellectual circle, but also to a wider reading public. As a result, literature and journalism became closely connected with questions of morality, politics, religion, education and civic responsibility.

Methodology. The research is based on comparative-literary, historical-cultural and genre-stylistic methods. The comparative method helps to identify similarities and differences between English Enlightenment and Jadid polemics. The historical-cultural method explains the connection between polemical writing and the social conditions in which it appeared. The genre-stylistic method is used to analyze the main forms of polemical expression, including essay, pamphlet, satire, poetic criticism, dialogue, drama and educational treatise. The study focuses on the works of English Enlightenment writers Daniel Defoe, Jonathan Swift, Alexander Pope, Joseph Addison and Richard Steele, as well as Jadid reformers Mahmudkhoja Behbudiy, Abdurauf Fitrat, Abdulla Avloniy and Abdulhamid Chulpan.

Results. The analysis shows that English Enlightenment polemics was closely connected with the development of periodical literature. Addison and Steele created a type of publicistic writing that combined observation, moral reflection and mild polemical criticism. Their polemics was indirect, elegant and didactic. Daniel Defoe's polemics was more practical and analytical. In his publicistic works, he discussed politics, religion, trade and public life through facts, arguments and practical conclusions. Jonathan Swift used satire and irony as the main means of polemical expression. In *A Modest Proposal*, he exposed social cruelty through the contrast between rational language and morally shocking content. Alexander Pope expressed polemics in poetic form, using aphorism, satire, antithesis and irony.

In Jadid publicism, polemics had a stronger reformist character. Behbudiy used dramatic form to criticize ignorance and old educational methods. Fitrat developed polemics through dialogue and debate. Avloniy's polemics had a moral and pedagogical character, while Chulpan gave it emotional and lyrical expressiveness.

Discussion. The comparison of English Enlightenment and Jadid publicism reveals that polemics functioned as a powerful literary and social mechanism in both traditions. Although these traditions developed in different historical periods and cultural environments, they shared a common belief in the transformative role of the written word. In both cases, polemics was not limited to personal disagreement or direct dispute. It became a means of criticizing social defects, defending reformist ideas and shaping public consciousness. In English Enlightenment publicism, polemics was closely connected with the rise of periodical literature and the development of the public sphere. Addison and Steele used essays in *The Spectator* and *The Tatler* to correct public manners, taste and moral behavior. Their polemics was usually mild and indirect. They preferred irony, observation and moral reflection rather than open accusation. Through fictional characters and everyday situations, they showed the weaknesses of society and encouraged the reader to think critically.

Defoe's polemics had a more practical and analytical character. His publicistic writings were connected with politics, trade, religion and social order. Unlike Addison and Steele, Defoe often used direct argumentation, facts and practical examples. His polemical method was based on explaining a problem, identifying its causes and offering possible solutions. This makes his writing close to analytical journalism and political pamphlet literature. Swift's polemics was more satirical and sharper in tone. In *A Modest Proposal*, he used irony to expose the cruelty and moral blindness of society. The external form of the text seems rational and logical, but its content is shocking. This contrast creates a strong polemical effect. Swift does not simply criticize injustice; he forces the reader to recognize the absurdity of social and political indifference. Pope, in turn, expressed polemics through poetic satire. In his works, criticism becomes concise, aphoristic and artistically powerful. He used irony, antithesis and sharp evaluative language to attack false taste, poor judgment and cultural decline.

In Jadid publicism, polemics had a more urgent reformist and national character. Jadid writers wrote in a society that needed educational, cultural and intellectual renewal. Therefore, their polemics was often more direct and emotionally expressive than English Enlightenment polemics. Behbudiy used polemics to criticize ignorance and old educational methods. In Padarkush, the tragic plot becomes a warning to society and shows the destructive consequences of lack of education. Fitrat developed a more intellectual and dialogical form of polemics. In Munozara, different views are opposed to each other, and the necessity of reform is shown through debate. His polemics is based on questions, answers, refutations and logical reasoning. Avloniy's polemics is mainly moral and pedagogical. In Turkiy guliston yoxud axloq, he criticizes laziness, ignorance and bad upbringing, showing that education and morality are the basis of national progress. Chulpan gives Jadid polemics a more emotional and lyrical character. His writings appeal to national dignity, spiritual freedom and awakening. The main similarity between the two traditions is their reformist purpose. Both English Enlightenment writers and Jadid reformers used polemics to oppose ignorance, moral weakness and social passivity. Both traditions connected polemics with education and the improvement of society. At the same time, their historical functions were different. English Enlightenment polemics was mainly aimed at improving civic behavior, public morality and intellectual taste. Jadid polemics was more directly connected with national awakening, educational reform and cultural survival. Thus, polemics in both traditions should be understood as more than a stylistic device. It is a form of social thinking. English writers used polemics to refine public discussion and criticize the defects of civil society, while Jadid reformers used it to awaken a society in need of modernization. This difference explains why English polemics often relies on irony, satire and essayistic reflection, whereas Jadid polemics frequently uses direct appeal, moral urgency and emotional expression.

Conclusion. The genre and polemical specificity of English Enlightenment and Jadid publicism shows that polemics was an important instrument of social thought in both

traditions. Defoe, Swift, Pope, Addison and Steele developed analytical, satirical, poetic and essayistic forms of polemics, while Behbudiy, Fitrat, Avloniy and Chulpan used it for national awakening, educational reform and cultural renewal. Both traditions were united by their belief in enlightenment, reason and the power of the written word. However, English polemics was mainly aimed at correcting public manners and civic thinking, whereas Jadid polemics was closely connected with national development and social transformation.

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INGLIZ TILINI O'QITISHDA KOMPETENSIYAVIY YONDASHUV ASOSIDA IJODIY VA INTELLEKTUAL SALOHIYATNI SHAKLLANTIRISH MODELI

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Annotatsiya. Mazkur tezisdagi ingliz tilini o'qitishda kompetensiyaviy yondashuv asosida o'quvchilarning ijodiy va intellektual salohiyatini shakllantirish masalalari tahlil qilingan. Kommunikativ yondashuvning o'quvchilarning kreativ fikrlashi, mustaqil qaror qabul qilishi va intellektual faolligini rivojlantirishdagi ahamiyati yoritilgan.

Kalit so'zlar: kompetensiyaviy yondashuv, ingliz tili ta'limi, kreativ fikrlash, intellektual salohiyat, mustaqil fikrlash, ta'lim samaradorligi, o'quvchi faolligi, ijodiy faoliyat, zamonaviy ta'lim, pedagogik model.

Abstract. This thesis analyzes the issues of forming students' creative and intellectual potential based on a competency-based approach to teaching English. The importance of the communicative approach in developing students' creative thinking, independent decision-making, and intellectual activity is highlighted.

Keywords: competency-based approach, English language education, creative thinking, intellectual potential, independent thinking, educational effectiveness, student activity, creative activity, modern education, pedagogical model.

Аннотация. В данной работе анализируются вопросы формирования творческого и интеллектуального потенциала учащихся на основе компетентностного подхода к обучению английскому языку. Подчеркивается важность коммуникативного подхода в развитии у учащихся творческого мышления, самостоятельности в принятии решений и интеллектуальной активности.

Ключевые слова: компетентностный подход, обучение английскому языку, творческое мышление, интеллектуальный потенциал, самостоятельное мышление, эффективность обучения, активность учащихся, творческая активность, современное образование, педагогическая модель.

Bugungi globallashuv jarayonida xorijiy tillarni, ayniqsa ingliz tilini o'rganish ta'lim tizimining ustuvor yo'nalishlaridan biriga aylandi. Jahon miqyosida axborot almashinuvi, ilm-fan, texnologiya va xalqaro hamkorlikning asosiy vositasi sifatida

ingliz tilining ahamiyati tobora ortib bormoqda. Shu sababli umumiy o'rta ta'lim maktablarida ingliz tilini o'qitish sifatini oshirish, o'quvchilarda mustaqil fikrlash, kreativ yondashuv hamda intellektual salohiyatni rivojlantirish zamonaviy pedagogikaning muhim vazifalaridan biri hisoblanadi.

O'zbekiston Respublikasida ham ta'lim tizimini modernizatsiya qilish, kompetensiyaviy yondashuv asosida ta'limni tashkil etish va o'quvchilarning amaliy ko'nikmalarini rivojlantirishga alohida e'tibor qaratilmoqda. Xususan, xorijiy tillarni o'qitish tizimini takomillashtirishga doir davlat dasturlari va normativ-huquqiy hujjatlarda o'quvchilarning kommunikativ kompetensiyasini rivojlantirish bilan bir qatorda ularning ijodiy va intellektual imkoniyatlarini yuzaga chiqarish masalasi ham dolzarb vazifa sifatida belgilangan.

Kompetensiyaviy yondashuv ta'lim jarayonida o'quvchilarning nafaqat nazariy bilimlarini, balki hayotiy vaziyatlarda bilimdan foydalanish ko'nikmalarini ham shakllantirishga xizmat qiladi. Mazkur yondashuv asosida tashkil etilgan ingliz tili darslari o'quvchilarda muloqotga kirishish, muammoli vaziyatlarni hal qilish, tanqidiy va kreativ fikrlash, axborotni tahlil qilish kabi muhim kompetensiyalarni rivojlantiradi. Ayniqsa, zamonaviy raqamli texnologiyalar, interfaol metodlar va kommunikativ yondashuv asosida olib borilgan darslar o'quvchilarning intellektual faolligini oshirishda samarali natijalar bermoqda.

Shu bilan birga, amaliyotda ingliz tilini o'qitishda kompetensiyaviy yondashuvning barcha imkoniyatlaridan to'laqonli foydalanilmayotgani kuzatiladi. Ko'plab darslarda grammatika va lug'at boyligini o'rgatish ustuvor bo'lib qolmoqda, o'quvchilarning ijodiy tafakkuri, mustaqil fikrlashi hamda intellektual salohiyatini rivojlantirishga yetarli darajada e'tibor qaratilmayapti. Natijada o'quvchilarda ingliz tilidan nazariy bilim mavjud bo'lsa-da, uni amaliy faoliyatda qo'llash, erkin muloqot qilish va kreativ fikr bildirish ko'nikmalari yetarli darajada shakllanmay qolmoqda.

Bundan tashqari, ingliz tilini o'qitishda kompetensiyaviy yondashuv asosida ijodiy va intellektual salohiyatni rivojlantirishning yaxlit pedagogik modeli yetarli darajada ishlab chiqilmagan. Mavjud metodik tadqiqotlarda ko'proq kommunikativ kompetensiyani rivojlantirish masalalari yoritilgan bo'lib, kreativlik va intellektual rivojlanishni kompleks tarzda shakllantirishga qaratilgan ilmiy-metodik tavsiyalar kam uchraydi.

Mazkur mavzuning dolzarbligi aynan ingliz tili darslari orqali o'quvchilarning kreativ va intellektual kompetensiyalarini rivojlantirishning samarali pedagogik modelini ishlab chiqish zarurati bilan belgilanadi. Ushbu model ta'lim jarayonida innovatsion pedagogik texnologiyalar, interfaol metodlar, kommunikativ topshiriqlar va raqamli vositalardan samarali foydalanishni nazarda tutadi. Bu esa o'quvchilarning ingliz tiliga

bo'lgan qiziqishini oshirish, mustaqil va erkin fikrlash ko'nikmalarini rivojlantirish hamda ularni zamonaviy jamiyat talablariga mos shaxs sifatida shakllantirishga xizmat qiladi.

Mazkur ilmiy tadqiqotning yangiligi shundan iboratki, unda ingliz tilini o'qitishda kompetensiyaviy yondashuv asosida o'quvchilarning ijodiy va intellektual salohiyatini shakllantirishning yaxlit pedagogik modeli ishlab chiqiladi. Tadqiqot davomida kompetensiyaviy ta'limning mazmuni ingliz tili fanining o'ziga xos xususiyatlari bilan integratsiyalashgan holda tahlil qilinadi. Shuningdek, tadqiqotda:

- ingliz tili darslarida o'quvchilarning kreativ va intellektual faoliyatini rivojlantirish mezonlari aniqlanadi;
- kompetensiyaviy yondashuv asosida interfaol metodlar va innovatsion texnologiyalar tizimlashtiriladi;
- o'quvchilarning ijodiy va intellektual rivojlanish darajasini baholash indikatorlari ishlab chiqiladi;
- ingliz tili darslarida kreativ fikrlashni rivojlantiruvchi topshiriqlar tizimi taklif etiladi;
- ta'lim samaradorligini oshirishga xizmat qiluvchi metodik tavsiyalar ishlab chiqiladi.

Mazkur tadqiqotning yana bir ilmiy yangiligi — ingliz tilini o'qitishda kommunikativ, kreativ va intellektual kompetensiyalarni o'zaro integratsiyalashgan holda rivojlantirish modeli amaliyotga tatbiq etilishidadir. Ushbu model orqali o'quvchilarning til o'rganishga bo'lgan motivatsiyasi, mustaqil fikrlashi va muammoli vaziyatlarni hal etish ko'nikmalarini rivojlantirish imkoniyati yaratiladi.

Hozirgi kunda umumiy o'rta ta'lim maktablarida ingliz tilini o'qitish jarayonida bir qator pedagogik muammolar mavjud. Jumladan, dars jarayonlarida asosan grammatik qoidalarni yodlash va standart mashqlarni bajarishga ko'proq e'tibor qaratilib, o'quvchilarning kreativ va intellektual faoliyatini rivojlantirish masalasi ikkinchi darajada qolib ketmoqda. Shuningdek, o'quvchilarda:

- mustaqil va tanqidiy fikrlash;
- kreativ yondashuv asosida muloqot qilish;
- muammoli vaziyatlarni hal etish;
- ingliz tilida erkin fikr bildirish;
- bilimlarni amaliy faoliyatda qo'llash ko'nikmalari yetarli darajada shakllanmaganligi kuzatilmoqda.

Muammoning yana bir jihat shundaki, ingliz tilini o'qitishda kompetensiyaviy yondashuvni amalga oshirishga qaratilgan metodik ta'minot va pedagogik texnologiyalar tizimi yetarlicha ishlab chiqilmagan. O'qituvchilarning aksariyati an'anaviy metodlardan foydalanib kelayotganligi sababli, darslarda o'quvchi markazli

yondashuv va kreativ faoliyatni tashkil etish imkoniyatlari to'liq namoyon bo'lmayapti.

Bundan tashqari, o'quvchilarning ijodiy va intellektual salohiyatini baholash mezonlari ham yetarli darajada takomillashtirilmagan. Natijada ta'lim jarayonida o'quvchilarning kreativ fikrlashi va intellektual rivojlanishini monitoring qilishda muammolar yuzaga kelmoqda.

Shu sababli ingliz tilini o'qitishda kompetensiyaviy yondashuv asosida o'quvchilarning ijodiy va intellektual salohiyatini shakllantirishning samarali pedagogik modelini ishlab chiqish va amaliyotga joriy etish muhim ilmiy-pedagogik muammo sifatida tadqiq etishni talab etadi.

Foydalanilgan adabiyotlar ro'yxati

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ХОМИЛАДОР АЁЛЛАРДА ТУҒРУҚДАН КЕЙИНГИ КЕЧГИ ДАВРДА АСОРАТЛАНГАН ҚОН КЕТИШЛАРИДА ВАФОТ ЭТГАН ОНАЛАР ГИПОТАЛАМУСИ ПАТОМОРФОЛОГИЯСИ

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Аннотация: Туғруқдан кейинги даврда ўткир қон йўқотишларда ва туғруқдан 24 соатдан кейинги даврда қон йўқотишларда гипоталамусда функционал зўриқиш билан боғлиқ бўлган ўзгаришлар аниқланади. Бу асосий ўзгариш-ларни аксарияти гипоталамусни барча соҳасидаги базофил ва ацидофил хужайралар, стромасида микроглиал хужайралар пролиферацияси, стромасда фибрилляр тузилмаларни кўпайиши билан давом этганлиги аниқланди. Бу ўзгаришларни асосий жихатлари, ўткир камқонлик барча секретор нейронларда юзага келган ишемик хужайра ичи ресурсларини тотал кўринишида йўқотилиши (Ниссл моддаси камайяди) натижасида гипофиз ва ундан пастки ўқда турувчи барча эндокрин тизимда гипофункционал ҳолат юзага келиши, марказий тормозланиш билан намоён бўлиб, туғруқдан кейин коматоз ҳолатни юзага келишини тасдиқлайди.

Калит сўзлар. Гипоталамус, қон кетиш, туғруқ, хомиладорлик, некроз, нейрон, Ниссл моддаси.

Аннотация. Туғруқдан кейинги даврда бачадондан қон кетишида гипоталамусни супраоптик ва паравентрикуляр соҳаларидаги ядро нейронларидаги асосий морфологик ўзгаришлар ўткир ишемия оқибатида Ацидофил ва базофил хужайралар, некронлар цитоплазмасидаги киритмаларни кескрин камайиши каби дистрофик, некробиотик ўзгаришлар юзага келиб, ўткир эндокрин тизим маркказидан перифериягачам бўлган ўқда ўткир етишмовчилик ривожланиши билан давом этади. Айнан хомиладор аёлларда ушбу ҳолатда гипоталамо гипофизар дезинтеграцияни издан чиқиши дастлаб гипофизда гиперфункция ва функционал етишмовчилик оқибатида периферик аъзоларда ўткир гемодинамик бузилишларни юзага келиши ва коматоз ҳолатни ривожланишига олиб келиши билан хараткерланади.

Калит сўзлар: Гипоталамус, туғруқдан кейинги бачадон ичи қон кетиши, оналар ўлими, некроз, дистрофия.

Муаммони долзарблиги: Дунё аҳолисида ҳомиладор аёлларда туғруқ-дан кейин турли сабабларга кўра бачадон ичи қон кетишларида оналар ўлимини асосий қисмини ташкил этиб, ЮНИСЕФ 2022 маълумотларига кўра, ҳомиладор аёллар ўлими 2022 йилда 301000 мингтани ташкил этган. Бу эса ривожланаётган давлатларда ушбу ўлим кўрсаткичи, 72,3% ни ташкил этади.

АҚШ ва Европа давлатларида оналар ўлими ўртача, 100 мингта ҳомиладор аёлларга 24 тани ташкил этса, Россия Федерациясида бу кўрсаткич 100 мингтага 36,5 тани, Азәрбайджан, Албания, Арманистон, Босния ва Герцеговина, Грузия, Туркия, Қирғизистонда бу кўрсаткич 100 мингтага 61,3 тани ташкил этса, Тожикистон ва Туркманистонда бу кўрсаткич юритилмаганлиги, Ўзбекистонда бу кўрсаткич 2022 йилда 100 мингтага 179 тани ташкил этганлиги аниқланган¹.

Бу кўрсаткични яънада давом эттириш мумкин бўлиб, энг кўп оналар ўлими кузатиладиган давлатлар булар учинчи давлатлар ёки ривожланаётган, МДХ давлатларида юқори кўрсаткичлар билан характерланади. Айнан, оналар ўлимида турли этиологияли танотогенезни муҳим жихатлари, бу ҳомиладорликка алоқадор ва алоқадор бўлмаган касалликлар бўлиб, аксарият, репродуктив аёлларда экстрагенитал касаллик-ларни ҳомиладорлик пайтида қўзиши ёки скрининг қилиш имкониятини бўлмаслиги билан характерланиб, ҳомиладорликни 2 ва 3 нчи триместидида тўсатдан эндокрин бузилишлар жумладан буйрак усти безининг патологиялари муҳим ҳисобланади.

Эътиборли жихатларидан бири, бу иштимой омиллардан бири бўлган стрессор омиллар ҳомиладорларда кортико-гипоталамо-гипофизар ва симпатoadренал тизимни ўзаро интеграл боғлиқлигини издан чиқариши оқибатида мураккаб патогенетик механизмни юзага келиши ва жуда мавҳум бўлган симпатoadренал тизимдаги бузилишлар оқибатида, ҳомиладор аёлларда буйрак усти безининг етишмовчилиги ёки гиперфункционал ҳолатини юзага келиши преэклампсия ва эклампсия ривожланишига олиб келиши оналар ўлимини юқори кўрсаткичлар билан намоён қилади. Бу эса, мутлоқ долзарб ва муҳим бўлган муаммони айни пайтда тўғри танланганлиги ва заруратини тақозо этади. Тадқиқотимизни мазмунини ҳам турли этиологияли оналар ўлимида буйрак усти безининг патоморфологияси ва танотагенез механизминини ишлаб чиқиш ва тавсия орқали юқорида келтирилган кўрсаткичларни камайтиришдан иборатдир.

Натижа ва муҳокама:

Динамикда, гипоталамусдаги асосий ўзгаришлар, супраоптик ва парвентрикуляр соҳадаги секретор нейронлар асосан адашган нервни

парасимпатик иннервацияси учун муҳим бўлган холиноэргик рецепторларга сезгирлик ва жавоб реакциясини кескин пасайиши оқибатида, ички юъзоларни иннервацияси издан чиқиши, томирларни кескин кенгайишига олиб келишини англатади. Гипоталамусни олдинги соҳасида ушбу марказлардаги ўткир ва давомий ишемик жараёнлар секретор нейронларда жойлашган тигроид Гипоталамо-гипофизар дезинтеграция ва тизимли гемодинамик коллапси, қон кетиши натижасида гипоталамо-гипофизар тизимнинг интеграл боғлиқлиги издан чиқади (дезинтеграция). Дастлаб гипофизда гиперфункция кузатилса-да, кейинчалик 8-24 соат ичида барча ресурсларнинг кескин тугаши ва функционал коллапс юзага келади. Бу жараён адашган нервнинг парасимпатик иннервацияси учун муҳим бўлган холинергик рецепторлар сезгирлигининг пасайиши билан кечади. Натижада ички аъзолар иннервацияси бузилиб, томирларнинг кескин кенгайиши ва полиорган етишмовчилик ривожланади.

Нейроморфологик қайтмас ўзгаришлар ва стромал реакцияси динамик кузатувлар шуни кўрсатадики, туғруқдан кейинги биринчи 24-48 соат ичида нейронларда дистрофик ва некробиотик жараёнлар чуқурлашиб боради. Микроскопик даражада нейронларнинг буриши (пикноз), цитоплазма вакуолизацияси ва стромада микроглиал хужайралар пролиферацияси аниқланади. Қон томир ўтказувчанлиги ортиши туфайли юзага келган периваскуляр шиш (Вирхов-Робен бўшлиқларида суюқлик тўпланиши) маҳаллий гипоксияни янада чуқурлаштириб, нейронларнинг ўлимига сабаб бўлади.

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PEARL S. BUCK'S LITERARY ENVIRONMENT AND IDEAS

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Abstract. Pearl S. Buck was a major literary figure of the 20th century, and her works gave us a glimpse into the cultural and social realities of China. What's interesting is that she was a cross-cultural writer, and through her fiction, we can see the roles of women in traditional Chinese society. This study looks at the literary environment that shaped Pearl Buck's writing and the main ideas in her works. Growing up in China as the daughter of American missionaries had a big impact on her worldview and creativity. Her novels explored themes like family values, women's roles, poverty, social inequality, and understanding between different cultures. One of her most famous novels, *The Good Earth*, tells the story of Chinese peasants and their deep connection to the land. This novel was a huge bestseller in the US and appealed to readers worldwide who wanted to learn more about China. The Japanese, in particular, were fascinated by stories about Chinese farmers. Even today, stories about Buck's life and works are still featured in the Japanese press - by the end of 2022, Japan's top three newspapers had published 568 articles about her. This study also examines how Buck used literature to build bridges between Eastern and Western cultures. Her realistic writing style, humanistic ideas, and social commentary made her a significant voice in world literature. By exploring her works, we can gain a deeper understanding of the cultural and social issues that shaped her writing. Buck's writing continues to be relevant today, offering insights into the complexities of human experience and the importance of cross-cultural understanding.

Keywords: Pearl S. Buck, literary environment, humanism, Chinese culture, women's role, intercultural understanding, social inequality, family values, realism, *The Good Earth*.

Introduction. Pearl Buck, who was born in rural West Virginia, was taken to China by her missionary parents just a few months after her birth in 1892. Years before, her parents, Absalom and Carie Sydenstricker, spent some time in Japan. Their ship stopped in Yokohama, Kobe, and Nagasaki on their way from West Virginia to Shanghai, China. Pearl described her parents' views of Japan in Buck (1966, 9–12): For them, Japan was their first sight of the Orient and remained for them somewhat of a dream, a land of disciplined beauty, of cleanliness and order, a land of manageability

and comprehensibility. They escaped to Japan in later years for brief periods when torrid summers and contending warlords made life in China intolerable. Years later, after spending time in Japan, Buck wrote about her own views of Japan:

Japan was like a dream to me when I was a kid. Every time we traveled across the Pacific, I couldn't wait to visit. The country had a storybook feel to it - the beautiful scenery, the unique buildings, and the people who were always so polite and friendly. They would often give me gifts, which made me feel special. I loved stopping in Japan because it was like a safe haven in the middle of a big, stormy ocean. The islands were calm and peaceful, and that's what made them so appealing. As Pearl Buck once said, Japan was a place of serenity, a place where you could escape the chaos of the world.

Pearl S. Buck is a big name in American literature from the 20th century. She's known all over the world for writing about Chinese life and culture in a way that's real and honest. What sets her apart from other Western writers of her time is that she actually lived in China for a big part of her childhood and young adult years. Because her family were missionaries, she got to learn about Chinese customs, language, and daily life from a really young age. This mix of Eastern and Western cultures had a huge impact on her writing and the ideas she came up with. As a result, her stories are not just entertaining, but also give readers a glimpse into a different way of life. By sharing her experiences and observations, Pearl S. Buck helped bridge the gap between two very different cultures, making her a truly important figure in literature. Her unique perspective and writing style continue to inspire readers and writers to this day, and her work remains a significant part of American literary history.

The world Pearl Buck grew up in as a writer was a mix of Eastern and Western cultures. At the start of the 20th century, China was going through a lot of changes - people were poor, there were wars, revolutions, and some people had more than others. Buck saw firsthand how hard life was for peasants in China and how the old ways were changing. These experiences later became the basis for many of her books and stories. Her writing shows not just the struggles of everyday people, but also the values, traditions, and feelings that connect us all, no matter where we're from or what our culture is. She wrote about things that matter to everyone, like how people live, what they believe in, and how they feel. By doing so, she was able to share the stories of Chinese people with the world, and show that even though we may be different, we're all connected in many ways.

Buck's unique perspective, shaped by her experiences in China and her Western upbringing, allowed her to create stories that were both authentic and relatable to people from different backgrounds. Her writing continues to be an important part of literary history, offering a glimpse into the lives of people in a changing China, and the

universal human experiences that we all share. Pearl Buck was a writer who helped people in the West understand Chinese culture in a real and caring way. Back then, many Americans didn't know much about China and often thought of it in a stereotypical way. Buck's novels tried to bring people from different cultures closer together. She showed that Chinese people are just like everyone else, with the same hopes and fears, and things that make them happy or sad. By doing this, her writing became a way to connect different worlds and encourage people to respect and appreciate each other's differences. Buck's work was important because it helped break down barriers between cultures and promoted understanding and kindness. Her stories made people see that, even though we may be from different parts of the world, we are all similar in many ways. This helped to build a bridge between the East and the West, and her literature is still valued today for its ability to bring people together.

Her most famous novel, *The Good Earth*, published in 1931, played a major role in establishing her literary reputation. The novel portrays the life of Wang Lung, a poor Chinese farmer, and his family as they struggle with poverty, famine, wealth, and social change. Through this work, Buck emphasized the importance of land, family unity, hard work, and moral responsibility. The novel became highly successful, won the Pulitzer Prize in 1932, and later contributed to Buck receiving the Nobel Prize in Literature in 1938.

Pearl Buck's writing also focused on the lives of women and how they were treated unfairly in society. Her female characters were often shown as strong, hardworking, and patient, even when faced with difficult situations. Buck believed that women should be treated equally and with respect, and she wrote about the struggles they faced in their daily lives. She wanted people to understand and care about the problems women encountered, and to recognize the importance of treating everyone with kindness and dignity, no matter their background or culture. By sharing her thoughts and ideas through her stories, Buck encouraged readers to think about the importance of equality and compassion for all people. Her writing continues to inspire people to work towards creating a more just and fair society, where everyone is valued and respected.

Therefore, the study of Pearl Buck's literary environment and ideas is important for understanding how personal experiences, cultural background, and historical events influence literary creativity. Her works remain valuable not only because of their artistic quality but also because of their message of humanity, cultural understanding, and social justice. Pearl Buck's contribution to literature continues to inspire readers and researchers around the world today.

Conclusion. Pearl Buck's literary environment played a major role in shaping her worldview and artistic creativity. Her experiences in China enabled her to describe Chinese culture and society realistically and sympathetically. Through her novels, she highlighted important themes such as human dignity, family values, women's rights, poverty, and intercultural understanding.

Pearl Buck's writing still matters today because it teaches us to be kind, care about others, and think about social issues. One of her most famous books, *The Good Earth*, shows how much she believes in the power of regular people and the need to stay true to our moral and cultural values. By writing about different cultures, Pearl Buck helped people in the East and West understand each other better, and she became one of the most important writers of the 20th century. Her stories continue to inspire us to be more compassionate and aware of the world around us.

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ОҒИР АТЛЕТИКАДА ДАСТ КЎТАРИШ МАШҚИНИ БАЖАРИШ АСОСЛАРИ

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Аннотация: Уш бу мақолада оғир атлетика спорт турининг мусобақа машқларидан бири даст кўтариш машқини фазалар бўйича бажариш тузилмаси ва уларнинг мазмунни ёритиб берилган.

Калим сўзлар: даст кўтариш, штанга, давр, фаза, машқ, очилиш, штанга остига ўтириш, қайд қилиш.

Кириш. Оғир атлетика спорт турида мусобақалар алоҳида иккита мустақил машқлар асосида ўтказилади. Ушбу мусобақада мусобақа қоидаларига мувофиқ аввал даст кўтариш сўнгра силтаб кўтариш машқлари бажарилади.

Даст кўтариш машқи ўзининг мураккаб координация ҳаракатлари билан ажралиб туради. Даст кўтариш тезкор-куч қобилиятини талаб этувчи машқлар туркимига киради. Даст кўтариш машқини бажариш учун муайян оғир билан штангани кенг ушлаб тўхтовсиз ҳаракат билан юқорига кўтариб (ўтириб қабул қилиб олиш рухсат этилган) бош орқасига текисланган кўлларда ушлаб туриш лозим бўлади. Даст кўтариш қисқа вақт давом этадиган машқ ҳисобланади. Асосий ҳаракатларни тўлиқ бажаришга бир сония атрофида, дастлабки ҳолатдан якуний қайд қилиш ҳаракатини инобатга олганда 2,5-3 сонияларни ташкил этади.

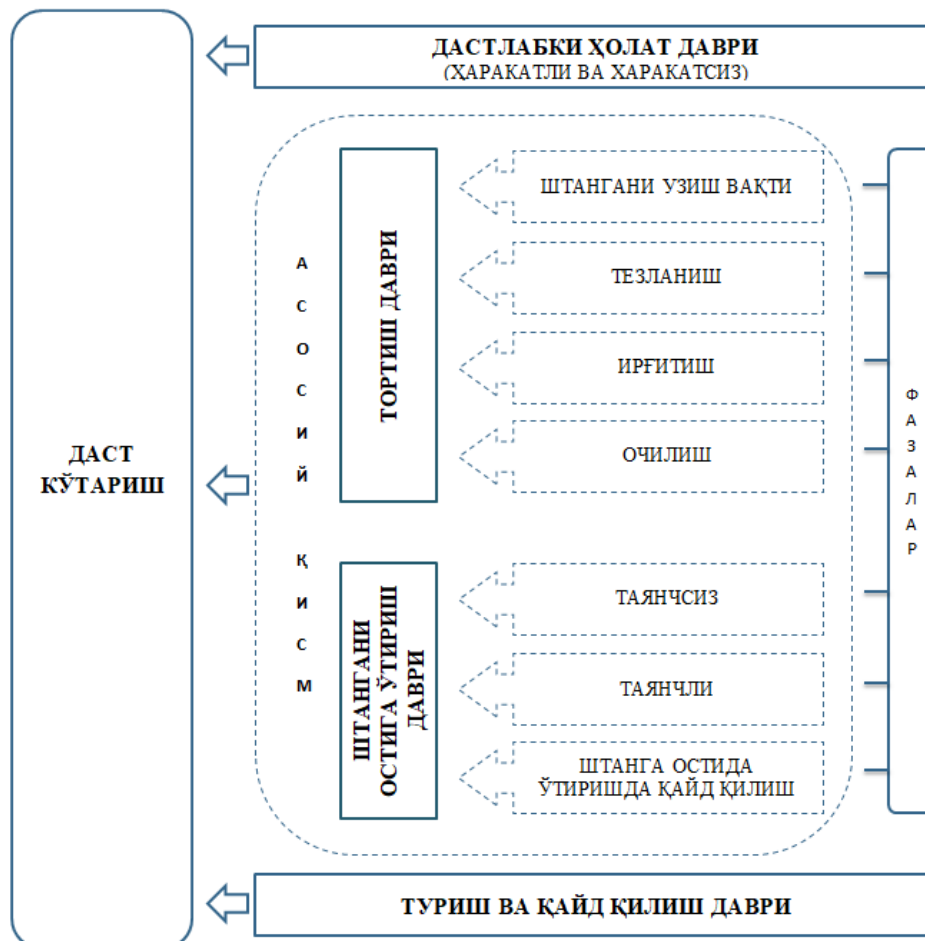
Л.С.Дворкин, Р.М.Маткаримовларни тавсиясига кўра даст кўтариш машқини бажариш тузилмаси кўра учта қисм, бешта давр ҳамда тўққиста фазаларни қамраб олади.

Оғир атлетика спорт турининг буқунги ривожланишда, яъни мусобақаларда даст кўтариш натижаларини ошиб бориш натижасида рақобатлашиш босими кўчайиб бормоқда. Тренерлар ва мутахассислар олдида машқ бўйича спорт натижаларни ошириб бориш масаласида бир қатор изланишларни олиб бориш талабини кўймоқда.

Мусобақаларда даст кўтариш натижаси силтаб кўтариш машқида тактик ҳаракатларни осон олиб боришга хизмат қилади. Шу боис, даст кўтариш машқидаги натижаларни нафақат куч қобилияти орқали балки уни рационал ҳаракат билан эришиш масаласига катта эътибор қаратилмоқда.

Бугунги кунда штанга грифини эгилувчанлик хусусиятини инобатга олиб мусобақада спортчилар тамонидан даст кўтариш машқини бажариш тартиблари

тубдан ўзгарганлигини ҳисобга олиб мазкур машқдаги қисмларини қайта ўрганиб чиқилиб давр ва фазалари оптималлаштирилди шунингдек, асосий қисмга эътибор беришни авзал кўрдик (1-расмга қаранг).



1-расм. Даст кўтариш машқини бажариш тузулмасининг чизмаси

Расмда кўриниб турибдики бир қатор [Л.С.Дворкин, Р.М.Маткаримов, Ю.В.Воронович, Д.А.Лавшук, В.И.Загrevский, Р.А.Роман ва б.қ.] мутахассислар тамонидан тавсия этилган тайёрлов қисмда спортчилар машқни қай даражада бошлаши тўғрисида фикрларини жамлаб олиш учун штанга олдида жойлашиши ва дастлабки ҳолатни қабул қилиш назарда тутган. Шу сабаб тайёрлов қисмни дастлабки ҳолатни қабул қилиш даври ўзгартириш мақсадга мувофиқдир. Спортчилар тамонидан машқни бажариш олдида ҳаракатли ва ҳаракатсиз дастлабки ҳолатни қабул қилиш усулларида фойдаланилади.

Дастлабки ҳолатни қабул қилгандан сўнг спортчи машқни бажаришга ўтади. Тана мушакларини зўриқтириш ҳисобига штангани тахтасупадан узиш фазасидан бошлайди. Бу эса тортиш даврининг биринчи фазаси ҳисобланади. Сўнг тезланиш, ирғитиш ҳамда очилиш фазаларига ўтади.

Штангани узиш вақти (ШУВ) спортчининг штанга билан ўзаро ҳаркатларининг мураккаб тизими ҳисобланади. Штангани чўзилувчан хусусиятини инобатга олган ҳолда ШУВ штанга грифини икки турда (секин, тез) амалга оширилади. Бу фазанинг давомийлиги одатда 0,15- 0,20 сонияни ташкил этади. Бироқ давомийликни ҳисоблаш вақти фақат шартли равишда олинishi мумкин, масалан, оёқлар букилиши тугаган (динамик стартда) пайтдан ёки уларни ёзиш бошланган (статик стартда) пайтдан бошлаб.

ШУВ орқали “спортчи штанга” тизимининг мувозанатлашувига эришиш лозим, чунки бошланғич ҳолатда (оғир вазнларни кўтаришда) штанганинг ҳаракат йўналишида қилинган хатони тузатиб бўлмайди.

Тезланиш ШУВ дан бошланади ва ирғитиш бошланишигача давом этади. Тезланиш бошида спортчи томонидан штангага бериладиган кучланиш тез ўсиб боради. Тезланишда штангани кўтариш пайтида гавда ёзилишига қараганда оёқларнинг илгарилаб ёзилиши давом этади. Штанга спортчининг оёқларига яқинлашиб, юқорига-орқага ҳаракат қилишда давом этади. Елкалар юқорига, лекин бир оз олдинга, ёй бўйлаб силжиб ҳаракатланади, “Спортчи-штанга” тизими кинематик занжирлари ҳамма бўғимларининг қатъий ўзаро боғлиқлигини сақлаб қолиш, етарлича кучли кучланишларни ривожлантириш ҳам тортиш даврини бажаришнинг оптимал тавсифига киради. Ҳаракат оёқларнинг илгарилаб тизза бўғимларидаги ёзилиши ҳамда ёйилган ёки текис ҳолатни сақлаб турувчи гавда оғишининг бир оз ошиши билан бажарилади.

Ирғитиш фазаси тезланиш фазаси якунида тоз-сон буғимини ёйилиши эвазига штанга грифи тос-сон буғими атрофида ирғитиш дарҳол бажарилади. Эркакларда ирғитиш жойи қов ва чаноқ суяги бош қисми оралиғида аёлларда эса тос суягидан пастроқ ва тўрт бошли сон мушакнинг юқори қисмида бажарилади. Ирғитиш даражасининг бошланиши гавдани фаол ёзиш, оёқларни тос-сон бўғимларидан (тизза бўғимлари букилганда) ёзиш штанга ва гавданинг оғирлик марказларининг кескин ўсиб боровчи яқинлашиши билан боғлиқ. Юқорида кўрсатиб ўтилган параметрларнинг кўпчилигини ҳаракатнинг қисқа вақт ичида содир бўлиши туфайли кўз билан баҳолаб бўлмайди.

Очилиш тиззаларни ёзиш пайтидан (олдинги фазада уларнинг букилиши тугагандан кейин) бошланади. Бир вақтнинг ўзида гавданинг якунловчи ёзилиши ҳаракати содир бўлади. Тизза бўғимларидан ёзилиш тамом бўлиши билан фазанинг тугаганлиги қайд қилинади.

Бу фазани тўғри тушуниш ва ҳаракат хусусиятини тушунтириб бериш учун унинг бажарилишини ирғитиш фазасига боғлиқ ҳолда кўриб чиқиши зарур. Бу бир вақтга иккита фазани бирлаштирувчи пайт - бу иккала фаза давомида яхлит,

тўхтовсиз ҳаракат билан бажариладиган гавданинг ёзилиши ҳамда оёқлар ишининг ўзига хос механизмидир.

Очилишни (Финал тезланиш) бажариш бошида тос-сон бўғимларини хаддан зиёд “ёзиб юбориш” ҳоллари кўп учраб туради. Бунда бурчаклар 175-185° етади. Бир вақтнинг ўзида тос-сон бўғимларининг етарлича ёзилмаслиги штангани штанга остига ўтиришда мувозанатни йўқолишига олиб келади.

“Ирғитиш” очилиш ва “штанга остига ўтириш” чегарасида охириги ҳаракатнинг нотўғри бажарилиши оёқлар букилиши бошлангунга қадар елкаларни кўтариш ҳам чўккалашга тез ўтишга тўсқинлик қилади. Елкаларни кўтариш чўккалаш бошланиши билан бир вақтда амалга оширилса, тўғри бажарилган ҳисобланади. Таянчсиз штанга остига ўтириш фазаси ўз вақтида бошланишидир, очилишдан штанга остига ўтишдаги тўхталиш хато ҳисобланади. Штанга остига ўтириш спортчининг штанга билан тез ўзаро алоқаси тавсия қилинади. Бунда қўллар штангада итариловчи ҳаракатни бажаради, штанга остига ўтириш тезроқ бажарилади. Бундай фаол бажарилганда бутунлай штанга остига ўтиришда қайд қилинади. Баъзан том маънода таянчсиз чўккалаш бўлмайди ва платформа билан ўзаро таъсирини бир оз сақлаб туради. Таянчсиз чўккалаш фазасининг давомийлиги шундай вақт даври бўйича ҳисобланадики, бу ерда таянчли реакция катталиги спортчининг тана вазни даражасида қайд қилинади.

Таянчли штанга остига ўтириш фазаси спортчининг оёқ кати тахтасупага туташган вақтдан бошланади ва штанга остида қайд қилиш вақтигача давом этади. Бу туриш пайтида мувозанат ўрнатишни таъминлайди. Таянчли штанга остига ўтириш кетидан тез туриш билан бажариш мақсадга мувофиқ. Бунда бажариш вариантида штангани ушлаб туриш фазасини бўлмайди. Бироқ штанга остига ўтириш ҳаракат вазифаси мувозанатни сақлаш ва бир оз мувозанатлаштириш ёрдамида штангани қайд қилиш зарурияти билан боғлиқ. Бу даст кўтаришнинг энг кўп учраб турадиган вариантдир.

Даст кўтаришда штангани кўтариш пайтидаги якунловчи ҳаракатлари туриш ва штангани қайд қилиш билан боғлиқ. Спортчи туришни якунлаб, штангани юқорида текисланган қўлларда ушлаб туриб қайд қилинади, бунда гавданинг барча бўғинлари ва штанга грифи битта вертикал текисликда жойлашади. Туриш якунланганда оёқ учлари албатта бир чизикда туриши лозим.

Хулоса. Техник маҳоратга эга бўлиш учун даст кўтариш машқининг ҳар бир фазаларини мукамал ва мақсадли ўрганиш билан боғлиқ. Чугки даст кўтариш машқи мураккаб координатсион ҳаракат билан боғлиқ. Даст кўтариш машқини қабул қилинган тўққиста фазаси еттита фазага ўзгариши бошланғич тайёргарликда ушбу машқни ўргатишда ўзига хос хусусиятга эга бўлди.

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БАЧАДОН МЕЗЕНХИМАЛ ХАВФЛИ ЎСМАЛАРИДА ИММУНОГИСТОКИМЁВИЙ ЎЗГАРИШЛАРНИНГ ҚИЁСИЙ ТАҲЛИЛИ

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Тадқиқот мақсади. Бачадон лейомиосаркомаси ва стромал саркомасида VEGF маркери экспрессиясини қиёсий иммуногистокимёвий таҳлил қилиш ҳамда улар асосида патоморфологик агрессивлик ва прогноз хусусиятларини аниқлаш.

Материал ва методлар. Иммуногистокимёвий тадқиқот Bond Leica Australia иммуногистопроцессорида стандарт протокол асосида бажарилди. Парафин блоклардан 4 мкм қалинликда кесимлар тайёрланди, депарафинлаш, дегидратация, демаскировка, эндоген пероксидазани блоклаш, бирламчи антитаналар билан инкубация, DAB-хромогенда визуализация ва гематоксилин билан контрбўяш босқичлари амалга оширилди.

Натижалар. VEGF бўйича микромир зичлигини қиёсий таҳлил қилиш стромал саркомада ангиогенез жараёнининг юқори фаоллигини кўрсатди (25,0 томир/кўрув майдони), бу лейомиосаркомага нисбатан (12,5 томир/кўрув майдони) сезиларли даражада юқори ҳисобланади. Ушбу ҳолат стромал саркоманинг биологик агрессивлиги, тез ўсиши ва метастаз бериш эҳтимолининг юқорилиги билан боғлиқ. Лейомиосаркомада эса ангиогенез нисбатан чекланган бўлиб, VEGF экспрессияси ўсманнинг морфологик гетерогенлигини акс эттиради. Шу сабабли микромир зичлиги прогностик аҳамиятга эга бўлиб, уни комплекс иммуногистохимик таҳлил доирасида баҳолаш мақсадга мувофиқ. VEGF экспрессиясига боғлиқ микромирлар зичлиги таҳлили шуни кўрсатадики, стромал саркома лейомиосаркомага нисбатан анча юқори ангиоген фаолликка эга бўлиб, бу унинг биологик агрессивлиги ва клиник жиҳатдан ноқулай прогнози билан чамбарчас боғлиқ.

Хулоса. VEGF бўйича лейомиосаркомада бир кўрув майдонида 10–15 та, стромал саркомада 20–30 та позитив томир аниқланди; бу стромал саркомада ангиогенез даражаси сезиларли юқори эканини кўрсатди. VEGF, Ki-67 ва Bcl-2 маркерларини биргаликда баҳолаш бачадон мезенхимал хавфли ўсмаларининг агрессивлик даражасини патоморфологик жиҳатдан асослаш, прогнози аниқроқ белгилаш ва даволаш тактикасини оптималлаштириш учун қимматли ёндашув ҳисобланади.

TASAVVUFDA ISHQ, TAJALLI VA SHARIAT UYG'UNLIGI: AHMAD YASSAVIY HIKMATLARI HAMDA TASAVVUFIY TAFAKKUR TALQINI

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Annotatsiya: Ushbu maqolada tasavvuf ta'limotida ishq tushunchasining shakllanishi, uning nazariy va ruhiy-ma'naviy mohiyati hamda shariat bilan o'zaro uyg'unligi tahlil qilinadi. Abu Husayn Nuriy, Robiya Adaviya, Najmiddin Kubro, Jaloliddin Rumiy, Ahmad Yassaviy kabi mutasavviflarning qarashlari asosida ilohiy ishqning inson qalbi va ruhiy kamolotidagi o'rni yoritiladi. Maqolada ishq, tajalli, ehson, fano va baqo tushunchalari tasavvufiy tafakkurning markaziy kategoriyalari sifatida sharhlanadi. Ahmad Yassaviy hikmatlari misolida ishqning insonni Allohga yaqinlashtiruvchi vosita ekanligi, shariat va tariqatning bir-birini to'ldiruvchi tizim sifatida namoyon bo'lishi ochib beriladi. Shuningdek, so'fiylar va faqihlar o'rtasidagi nazariy munosabatlar, komil inson konsepsiyasi hamda qalb pokligi masalalari tarixiy rivoyatlar va tasavvufiy manbalar asosida tahlil etiladi. Tadqiqot natijasida tasavvufning asosiy maqsadi insonni ilm, amal, qalb pokligi va ilohiy muhabbat orqali komillikka yetkazish ekani asoslab beriladi.

Kalit so'zlar: Tasavvuf, ishq, ilohiy muhabbat, Ahmad Yassaviy, hikmat, tajalli, ehson, fano, baqo, shariat, tariqat, ma'rifat, haqiqat, komil inson, qalb pokligi, ruhiy kamolot, so'fiylik, murshid, nafs tarbiyasi, ilohiy ishq.

Аннотация: В данной статье анализируется формирование концепции любви в учении суфизма, её теоретическая и духовная сущность, а также её совместимость с шариатом. На основе взглядов таких суфиев, как Абу Хусейн Нури, Рабия Адавия, Наджмиддин Кубро, Джалалуддин Руми и Ахмад Яссави, подчёркивается роль божественной любви в человеческом сердце и духовном совершенстве. В статье интерпретируются понятия любви, таджалли, ихсан, фано и бака как центральные категории суфийской мысли. Пример мудрости Ахмада Яссави показывает, что любовь является средством приближения человека к Богу, а шариат и тарика проявляются как взаимодополняющие системы. Также на основе исторических повествований и мистических источников анализируются теоретические отношения между суфиями и юристами, концепция совершенного человека и вопросы чистоты сердца. Исследование доказывает, что главная цель суфизма — привести человека к совершенству через знание, действие, чистоту сердца и божественную любовь.

Ключевые слова: суфизм, любовь, божественная любовь, Ахмад Яссави, мудрость, щедрость, благотворительность, наука, религия, просветление, истина, совершенный человек, чистота сердца, духовное совершенство, суфизм, муршид, самообразование, божественная любовь.

Abstract: This article analyzes the formation of the concept of love in the teachings of Sufism, its theoretical and spiritual essence, and its compatibility with Sharia. Based on the views of such Sufis as Abu Husayn Nuri, Rabiya Adawiya, Najmiddin Kubro, Jalaluddin Rumi, and Ahmad Yassawi, the role of divine love in the human heart and spiritual perfection is highlighted. The article interprets the concepts of love, tajalli, ihsan, fano, and baqa as central categories of Sufi thought. The example of Ahmad Yassawi's wisdom reveals that love is a means of bringing a person closer to God, and that Sharia and tariqa are manifested as complementary systems. Also, the theoretical relations between Sufis and jurists, the concept of a perfect person, and the issues of purity of the heart are analyzed based on historical narratives and mystical sources. The research proves that the main goal of Sufism is to bring a person to perfection through knowledge, action, purity of heart and divine love.

Keywords: Sufism, love, divine love, Ahmad Yassavi, wisdom, generosity, charity, science, religion, enlightenment, truth, perfect person, purity of heart, spiritual perfection, Sufism, murshid, self-education, divine love.

Tasavvuf tarixida ishq atamasi va konsepsiyasi ko'plab bahslarga sabab bo'lgan. Masalan, Abu Husayn Nuriy ishq so'zini tasavvufda birinchi marta qo'llagan. Robiya Adawiya ishqni Mutlaq Haqqa muhabbat sifatida talqin qilgan. Shu bilan birga, ba'zi ulamolar, xususan G'ulom Xalil Bag'dodiy, ishqni faqat maxluqotga xos sifat deb hisoblab, Allohga oshiq bo'lishni bid'at deb baholashgan. Shu munosabat bilan Abu Abdulloh Xafif Sheroziy ochiq-oydin: Allohga ishqni izofa qilish noto'g'ri, chunki ishqdagi eng kichik bid'at e'tiqod buzilishiga olib keladi. Bu qarashlar tasavvuf va shariat o'rtasidagi nazariy chegaralarni belgilaydi: ishq va hikmat faqat Alloh taologa yo'naltirilganida tasavvufiy tajriba sifatida maqbul hisoblanadi.

Shunday qilib, Yassaviy hikmatlarida: Ishq - inson ruhiy rivojlanishining markaziy omili; hikmatlar - shaxsiy tafakkur emas, Alloh taolodan keladigan ilhom mahsuli; shariat bilan uyg'unlik - tasavvufiy tajribaning muhim sharti; pir va murshid - ruhiy yo'lni boshqaruvchi rahnamolar; Qur'on va Hadis - hikmatlar va ishqning legitim asosidir.

Tasavvuf nazariyasi va ishq konsepsiyasi tasavvuf ahli insonning ichki olami va borliq sirlarini anglashda e'tiroz va shubhalarni rad etmasdan, izoh va dalillar bilan tushuntirishga harakat qilgan. Insonning tabiiy savollari - "Inson qayerdan keladi? Qayerga ketadi?" - ishq orqali tushuntiriladi.

Najmiddin Kubro ishqni quyidagicha ta'riflaydi: "Ishq insonning yurak-bag'rini yondiruvchi bir otashdir. U aqlni shoshtiradi, ko'zini ko'r, quloqni kar qiladi. Ammo u eng ulkan qo'rquvlarni ham kichraytiradi. Butun diqqatni ma'shuqaga jalb etadi"[5]. Ibrohim Haqqul domla esa ishq orqali inson olamdagi go'zallikni va barcha mavjudotlarni Alloh sevgisi bilan qabul qilishini ta'kidlagan[2]. Shu nuqtai nazardan, tasavvufda ishq - sevgining eng mukammal va oliy darajasi sifatida qabul qilinadi.

Ahmad Yassaviy ishq va tasavvuf adabiyoti o'rtasidagi bog'liqlikni chuqur ta'riflab, oshiqning avvalo ruhiy va qalb darajasida Xudo bilan to'lib-toshgan bo'lishi zarurligini bildiradi:

Dardsiz odam odam emas, muni angling

Ishqsiz odam hayvon jinsi, muni tinglang[2]

Ibrohim Haqqul domlanning fikricha, ishq nafaqat dard, quvonch, fidoyilik va sadoqatni, balki doimiy ma'naviy-ruhiy harakatni ham o'z ichiga oladi. Bu harakat nafaqat insonni, balki olamni ham yangilab, o'zgarishiga sabab bo'ladi. Shu nuqtai nazardan tasavvuf olimlari "xalqin jadid" (har on yangilanish) tushunchasini ilgari surganlar. Unga ko'ra, borliq har lahza yangilanadi, har on yangi yaratilish yuz beradi. Bu jarayonning asosi esa bir bo'lish (baqo) va yo'q bo'lish (fano) prinsiplariga bog'langan[8]. Har bir lahza bir bor bo'lish va yo'q bo'lish orqali yangilik va harakat hosil qiladi.

Koinotda takror mavjud emas; har bir lahza noyob va o'ziga xosdir. Bu jarayon ilmiy jihatdan ham qo'llab-quvvatlanadi: amerikalik olim qirq yil davomida qor parchalarini tadqiq qilib, har bir parchaning boshqa bir parchaning takrorlanmasligini ilmiy asosda isbotlagan. Shu bilan birga, bu tushunchalarni oddiy inson anglash qiyin bo'lsa-da, tasavvuf so'fiy shoirlar ularni badiiy va poetik shaklda tushuntirishgan.

Jaloliddin Rumiy "Masnaviy"ning ilk jildida shunday deydi: "Har on olam yangilanmoqda va biz turg'un qolganligimiz uchun uning o'zgarishini ilg'ay olmaymiz"[7]. Tasavvuf olimlari borliqni har lahza yangilanib turishini va har yangilanishni ilohiy ishq nuri bilan bog'laydilar. Har bir Tajalli - Allohning borliqni yangilash jarayoni bo'lib, uning orqali yangi borliqlar maydonga keladi. Shu tarzda inson va olam doimiy yangilanish va mukammallikka intiladi.

Tasavvuf nazariyasida tajalli tushunchasi borliqning doimiy yangilanishi va o'zgarishini qalb ko'zi bilan idrok etish jarayonini ifodalaydi.

Ahmad Yassaviy bu jarayonni shunday ta'riflagan: "Tajallining maqomidir ulug' maqom. Ishqa hollarni qalb ko'zi bilan borliqni doimiy yangilanish va o'zgarishda ko'rishlar nazarda tutilgan"[8]. Najmiddin Komilov bu qarashni hayotga nisbatan "romantik" yondashuv sifatida baholaydi[4]. Tasavvufda ishq - insonni Alloh

diydoriga yetkazuvchi asosiy vosita hisoblanadi. Yassaviy bu haqda shunday misralarni keltiradi:

Ishqqa qadam qo‘yg‘onlar Xaq diydorini ko‘rarlar,

Muso sifat mashharda Xaqdin savol so‘rarlar,

Ishq bozori – ulug‘ bozor. Biroq unda “savdo harom”.

Bu misralarda ishqqa qadam qo‘yish shariat amallaridan boshlanishini va oxirida tasavvufiy maqomlar orqali Alloh visoliga erishishni ifodalaydi.

Muso a.s. Alloh bilan to‘g‘ridan-to‘g‘ri muloqot qilgan payg‘ambar sifatida misol qilinadi; uning laqabi “Kalimulloh” bejizga berilmagan. Shu tariqa, ishq orqali inson Muso darajasiga ko‘tariladi, ya‘ni Alloh bilan yaqinlik va ruhiy poklanishga erishadi. Yassaviy “ishq bozori” misrasida shuni ko‘rsatadiki, oshiq uchun dunyodagi boshqa narsalar ahamiyatsizdir:

Oshiqlarga sendin o‘zga g‘avg‘o xarom,

Ishq yo‘liga kirganlarga dunyo xarom,

Har ne qilsang oshiq qilgil Parvardigor.

Oshiqlarni Allohdan boshqa g‘avg‘osi yo‘q va dunyo ularni chalg‘itmasligi kerak. Bu nuqtai nazardan, dunyoparastlik va insonning nafs tasavvufda asosiy xatolardan biri hisoblanadi. Ahmad Yassaviy barcha xatolarning boshlanishi va davomini dunyosevgisi bilan bog‘laydi:

Dunyoparast nojinslardan bo‘yun tovla,

Bo‘yun tavlab daryo bo‘lib toshdim mano.

Tasavvuf ilmida tajalli va ehson bir-birini to‘ldiradi. “Jabroil hadisi” yoki mashhur sahoba Umar ibn Xatob r.a. dan rivoyat qilingan hadis bunga asos bo‘ladi: “Allohg xuddi Uni ko‘rib turgandek ibodat qil. Agar sen Uni ko‘rmasang, U seni ko‘rib turgandek ibodat qil”[3].

Hadis tasavvufiy maqomlarni ikki bosqichda tushuntiradi: Allohni ko‘rib turgandek ibodat qilish – bu maqom eng oliy daraja bo‘lib, Rasululloh s.a.v Me‘roj kechasida shu maqomga yetganlari rivoyat qilinadi[2]. U seni ko‘rib turgandek ibodat qil – shariat bosqichi, ya‘ni shariatsiz tariqat, tariqatsiz ma‘rifat va ma‘rifatsiz haqiqatning mavjud bo‘lishi mumkin emasligini ko‘rsatadi.

Shunday qilib, tajalli, ishq va ehson tushunchalari tasavvuf ilmida Allohga yaqinlashish, qalb poklanishi va ruhiy yangilanishni ta‘minlaydigan markaziy tushunchalar sifatida namoyon bo‘ladi.

Rivoyat misoli: “Bir kuni Imom Shofiy hazratlari shogirdi bo‘lmish Imom Ahmad bilan birga ketayotgan edi. Yo‘lda bir cho‘ponni ko‘rib shogirdi Imom ibn Hanbal keling shu cho‘ponga dini haqida ozroq ilim bersak” - deganda ustozlari ibn Shofiy qo‘ying u kishi so‘fiyga o‘xshaydi deydi. Unga o‘zni tiliga gapirish kerak deydi.

Shogirdlari esa cho‘pon oldiga borib dini haqida savol beradi. Nechta qo‘ying bor deb so‘raganlarida u qirqta bor deb javob beradi. Shu qo‘ylardan nechtasini zakot berasiz deb so‘radi, cho‘pon siz bilgan narsani aytaymi yoki o‘zim bilganimni aytaymi deb javob qiladi. Imom Ahmad ibn Hanbal esa men bilganimni ayting deb javob berdilar. Shunda cho‘pon qirqta qo‘ydan bittasini zakot beraman dedilar. O‘zingiz bilganini ayting-chi deganlarida shunday javob berdi. Bu qo‘ylarni hammasi Allohnik qachon qayerda zarurati borligini bilsam hammasini berib yuboraman dedilar. Shunda Imom Ahmad ustozlari Imom Shofiyga qaradi va keyingi savolni berdi. Namoz o‘qiyotganingizda qaysi rakatga kelganingizni eslay olmasangiz nima qilasiz? - deb so‘radilar. U kishi siz bilgan narsani aytaymi yoki o‘zim bilganimni aytaymi, deb javob qiladi. Imom Ahmad ibn Hanbal esa men bilganimni ayting deb javob berdilar. Shunda cho‘pon siz bilganingiz eng kamni olib o‘tirib yana ikki rakat o‘qiyman, va sajdaif saf qilaman. Imom Ahmad esa endi o‘zingiz bilganingizni ayting-chi dedilar. Men bilganim buyuk Robbimni huzurida chiqib hayoli qochadigan, chalg‘iydigan insoni qalbni davolash kerak deb javob qildilar. Imom Ahmad hayron bo‘lib qoldilar shunda ustozlari Imom Shofiy hazratlari men sizga nima degan edim. Bu kishi so‘fiyga o‘xshaydi degan edimmi bular bilan o‘zni tili bilan gaplashish kerak deb aytdilar.” Bu rivoyatdan ko‘rinadiki har bir sufiy ham tariqatni bilishni, va har bir shariat ulamolari ham tariqatni bilishni ko‘rsatib o‘tmoqda. Rivoyatda siz bilganingizni aytaymi deyishini to‘g‘ri ma’noda tushunish kerak. Ya’ni bu yerda shariatni aytib o‘tmoqda. Cho‘poning esa o‘z tili bilan gaplashish kerakligini aytib o‘tgan Imom Shofiy esa so‘fiylarni bir ko‘rishdan tanishligini ham alohida aytib o‘tilganligini ko‘rishmiz mumkin. Bu go‘zal savol-javob tarzda bayon qilingan. Xo‘sh nega unda bu ikki guruh o‘rtasida shu darajada janjal kelib chiqib hattoki bir birni kufrda ayblagan. Bunga biz kimnidir aybdor yoki kimnidir haq deb aytmoqchi emasmiz. Faqat bu masalaga faqih va so‘fiy ulamolarni fikrlarni keltirib o‘tmoqchimiz.

Mashhur so‘fiy shayx Rifoiy r.a. aytadilar: “Siz Horis aytdi, Abu Yazid dedi, Halloj gapirdi deysiz. Shofiy aytdi, Molik aytdi, Ahmad dedi deysiz. Avvalo ochiq muammolarni to‘g‘rilang, so‘ngra ortiqcha gaplar ila huzurlaning. Shariat poydevori ilm va amal bilan mustahkamlanadi[6]. Shu fikrlar orqali sufiylar ilmni ibodatdan ustun qo‘yish zarurligini ta’kidlaydilar: “Bir soatlik ilm majlisi yetmish yillik ibodatdan afzaldir.” Vali (Alloh yo‘lida tanlangan kishi) hech qachon o‘z dini bo‘yicha johil bo‘lmaydi. U namoz, ro‘za, zakot va haj amallarini yaxshi biladi va qalbini ham poklaydi. Bu rivoyatlar va hikmatlardan ko‘rinadiki: Shariatni bilmasdan amalga oshirilgan ibodatlar to‘liq mukammal bo‘lmaydi. Tariqat ilmi qalbni tarbiyalaydi, shariat esa tashqi amallarni mustahkamlaydi. Haqiqiy sufiy shariat va tariqatni

uyg'unlashtiradi, shariatni inkor qilmaydi, fiqh ulamosi esa qalbiy tarbiyaga e'tibor beradi.

Shunday qilib, har bir shayx va tariqat sufiyining birinchi vazifasi shariatni chuqur o'rganish va unga amal qilishdir. Xo'ja Ahmad Yassaviyning "Faqrnoma"da noloyiq shayxlarning quyidagi illatlari qattiq qoralanadi:

- muridlardan ta'ma qiladi, jonini kufri zalolatdan ayirmaydi;
- ahli bid'atni yaxshi ko'radi, ahli sunnatni esa yomon ko'radi;
- ilmi shariatga amal qilmaydi;
- nomahramlarga ko'z soladi;
- yomonlikni pasha qiladi-yu, Alloh taoloning rahmatidan umid tutadi;
- mashoyixlar ishini xor tutadi;
- moddiy manfaat uchun muridlari eshigida xor-zor yuradi[1].

Bu yerda Yassaviy shayxlar va sufiylarni faqat ruhiy va shariat ma'rifatini oshirishga xizmat qiladigan, soxta shayxlar esa xalq orasida fitna chiqaruvchi guruh bo'lishini ogohlantiradi.

Shuningdek, Imom Molik hazratlari aytadilar: "Kim sufiy bo'lsa-yu faqih bo'lmasa zindiq hisoblanadi; kim faqih bo'lsa-yu sufiy bo'lmasa fosiqdir; kim ikkalasini ham jamlasa, u muhaqqiqdir." Shu bilan ulamolar shariat va tasavvufning uyg'unligi, ilm va amalning birligi eng yuqori natijaga olib borishini ta'kidlaydilar. Bu ilm tadriji bo'lib, unda shariat ilmi, tariqat ilmi va qalbiy tarbiya bir-birini to'ldiradi.

Bizning yurtimizdagi ulug' shayxlar va faqih olimlarimiz, dunyoga dong taratgan bobolarimiz singari, Allohdan ilmni mukammal qilishni, laduniy va rabboniy ilmlarni olishni so'rab, xalqqa adabiyot va diniy ma'rifatni chuqurroq yetkazishni davom ettiradilar. Tarixiy manbalar, mashhur shayxlar va ulamolar rivoyatlari shuni ko'rsatadiki, tasavvufning asosiy maqsadi Alloh taoloni tanish va bandalikni mukammal bajarish, komil insonni tarbiyalashdir.

Mashhur shayxlar va ulamolar (Imom Shofiy, Imom Ahmad ibn Hanbal, Imom Molik, Xo'ja Ahmad Yassaviyning Faqirnoma asari) shariat ilmi va tariqat ilmi uyg'un bo'lishini ta'kidlagan. "Bir soatlik ilm majlisi yetmish yillik ibodatdan afzaldir" degan rivoyat ilmning ibodatdan ustunligini va har bir murid, shayx va faqihning birinchi vazifasi ilmni o'rganish va amal qilish ekanligini bildiradi.

Qalb, ruh, nafs va aql tushunchalari orqali musulmon banda o'zini tanib, nafsini tarbiyalash va qalbini poklashga intiladi. Qur'oni Karimning "Shams" va "Isro" suralaridagi oyatlar nafs va ruhni to'g'ri yo'naltirish, taqvo va poklikni amalda uyg'unlashtirish zarurligini ko'rsatadi.

Xo'ja Ahmad Yassaviyning hikmatlari va rivoyatlar shuni isbotlaydiki, hech bir shayx shariatdan tashqariga chiqmaydi. Soxta shayxlar esa moddiy manfaatlar va bid'at

yo'llariga ergashadi, xalq orasida fitna tarqatadi. Imom Molikning ta'kidlashicha, shariat ilmsiz tasavvufni da'vo qiluvchi shaxs zindiq, sufiyliksiz faqat faqih bo'lgan shaxs esa fosiqdir. Eng mukammal yo'l shariat va tasavvufni birlashtirgan muhaqqiqdir. Estetik va axloqiy qadriyatlar: Tasavvufiy hikmatlar muridlarni nafsni tarbiyalash, qalb va ruhni poklash, hikmat bilan hayot kechirishga chaqiradi. Komil insonning xulqi va odoblari, Rasululloh s.a.v. hayoti va sunnatlari esa insoniyat uchun abadiy ibratdir. Tasavvufning mohiyati shariat bilan uyg'unlik, ilm va amalni uyg'unlashtirish, qalb va ruhiy poklikni ta'minlashdan iborat bo'lib, har bir murid va shayxning birinchi vazifasi ilm va amal orqali komil insonlikka intilishdir.

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ПРОФЕССИОНАЛЬНО-ПРИКЛАДНАЯ ФИЗИЧЕСКАЯ ПОДГОТОВКА СТУДЕНТОВ НЕФТЕГАЗОВОГО ПРОФИЛЯ КАК ФАКТОР ПОВЫШЕНИЯ ПРОФЕССИОНАЛЬНОЙ НАДЁЖНОСТИ И РАБОТОСПОСОБНОСТИ В УСЛОВИЯХ РЕСПУБЛИКИ УЗБЕКИСТАН

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Аннотация. Рассматривается значение профессионально-прикладной физической подготовки студентов нефтегазового профиля в повышении профессиональной надёжности и работоспособности будущих специалистов в условиях Республики Узбекистан.

Ключевые слова: профессионально-прикладная физическая подготовка, нефтегазовый профиль, работоспособность.

В современных условиях развития нефтегазовой промышленности Республики Узбекистан существенно возрастают требования к уровню профессиональной подготовки инженерно-технических кадров. Это обусловлено внедрением инновационных технологий добычи и переработки углеводородного сырья, расширением производственных мощностей и повышением уровня ответственности специалистов нефтегазового комплекса. В связи с этим особую актуальность приобретает проблема совершенствования профессионально-прикладной физической подготовки студентов нефтегазового профиля.

Профессиональная деятельность специалистов нефтегазовой отрасли характеризуется значительными физическими и психоэмоциональными нагрузками, работой в сложных климатических условиях, высокой ответственностью за безопасность производственных процессов и необходимостью быстрого принятия решений в нестандартных ситуациях [1]. Особенно это актуально для условий Республики Узбекистан, где многие нефтегазовые объекты расположены в регионах с жарким климатом и сложными условиями труда.

Исследования показывают, что традиционная система физического воспитания студентов не всегда обеспечивает формирование профессионально значимых физических и функциональных качеств, необходимых будущим инженерам нефтегазовой отрасли [2]. Общая физическая подготовка способствует

укреплению здоровья, однако недостаточно ориентирована на специфику профессиональной деятельности специалистов нефтегазового комплекса.

В зависимости от характера профессиональной деятельности специалисты нефтегазовой отрасли выполняют как физически напряжённую работу, связанную с эксплуатацией оборудования и работой в полевых условиях, так и деятельность, требующую высокой концентрации внимания, устойчивости нервной системы и оперативности мышления. В связи с этим профессионально-прикладная физическая подготовка должна быть направлена на развитие общей и специальной выносливости, силовых способностей, координации движений, стрессоустойчивости и психофизиологической надёжности [2].

Особое значение в подготовке будущих инженеров нефтегазового профиля имеет развитие устойчивости организма к воздействию неблагоприятных факторов производственной среды. Недостаточный уровень физической подготовленности может приводить к быстрому развитию утомления, снижению внимания, ухудшению координации движений и повышению вероятности профессиональных ошибок. В условиях современного производства это оказывает отрицательное влияние на эффективность трудовой деятельности и безопасность производственных процессов [3].

Одним из важных направлений совершенствования системы подготовки студентов нефтегазового профиля является внедрение профессионально ориентированных средств физической подготовки. Использование функциональных упражнений, прикладных видов спорта, циклических нагрузок и игровых методов способствует развитию физических и психологических качеств, необходимых в будущей профессиональной деятельности. Кроме того, спортивная деятельность способствует формированию дисциплинированности, коммуникабельности и способности эффективно работать в коллективе.

Следовательно, профессионально-прикладная физическая подготовка студентов нефтегазового профиля выступает важным условием формирования профессиональной надёжности, повышения работоспособности и развития адаптационных возможностей будущих специалистов. Совершенствование системы ППФП в высших образовательных учреждениях Республики Узбекистан будет способствовать повышению качества подготовки инженерных кадров и их эффективной профессиональной деятельности в современных условиях нефтегазового производства.

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GENRE CHARACTERISTICS OF HUSAYNIY'S WORKS

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Abstract. This article analyzes the life and literary activity of Husayn Bayqara, as well as the distinctive genre features of his lyrical poetry.

Keywords: Husayniy, “Risola,” “Nasabnoma,” *ramali musaddasi maqsur*, divan, *bayoz*, manuscript.

The literature of the Timurid period is considered the most flourishing stage of classical literature. In the 15th century, literature in Movarounnahr reached a high level of development. Shaykh Ahmad Tarazi, the author of *Funun ul-Balog'a*, provided information about many poets who lived and created during the Timurid era. While analyzing the works of poets who contributed to the development of Eastern classical poetics, the author also gives information about many Turkic- and Persian-speaking poets whose names had remained unknown to us. It can be understood that poets such as Iman Ziyovuddin Forsi, Jalal Samarqandi, Umid Kamoliy, Mavloni Sayfiddin, and Muhammad Ganjaviy occupied a significant place in the literature of the Timurid period. From the ghazal included in this work, we also learn that Shaykh Ahmad Tarazi himself was a talented poet of his time.

The work emphasizes that in the 15th century, the rulers' love and attention toward literature greatly influenced the literary process and the development of science in Khurasan and Movarounnahr. During this century, Uzbek and Persian literature developed side by side. New genres emerged in Uzbek classical literature, while existing ones evolved further. A unique literary style appeared in Uzbek poetry during this period. One of the important characteristics of this style was that literary works were created in Persian and Turkic languages, whereas scholarly works were written using Arabic words and expressions. This situation arose under the influence of the ethnic conditions of the region. The Timurid era gave rise to literature that reflected a new way of thinking. Even in later periods—after the fragmentation of the Timurid Empire and the establishment of the three khanates—the literary traditions of the Timurid age continued. Among the literature of this period, the works of Husayn Bayqara hold special significance.

In *Baburnama*, Zahiriddin Muhammad Babur evaluates Husayn Bayqara's activities as follows:

“The reign of Sultan Husayn Mirza was indeed a remarkable age; Khurasan, especially the city of Herat, was filled with men of virtue and incomparable talents. Whoever devoted himself to a certain craft or occupation aimed to perfect it.” [1,18]

Babur also emphasizes in the work that during Husayn Bayqara's reign, the city of Herat became ten or even twenty times more prosperous. He describes the king and poet Husayn Bayqara as follows in *Baburnama*:

“He was a brave and valiant man. On many occasions, he himself struck the enemy with the sword. Among the descendants of Timur Beg, no one is known to have wielded the sword like Husayn Mirza. He possessed poetic talent as well. He compiled a divan and wrote in Turkic under the pen name Husayniy. Some of his verses are quite good. However, the entire divan of the Mirza is written in a single meter.” [1,18]

While reading Navoi's works with great interest, Husayn Bayqara also engaged in literary creation himself. He wrote under the pen name Husayniy and composed a poetic collection called *Risola* dedicated to Navoi. His work *Risola* was written in the spirit of a “Munajat” (supplication to God). In it, he expresses gratitude to God both as a ruler and a poet for granting him the happiness and endless blessings of this world and for making him a contemporary and companion of such scholars as Jami and Navoi.

Husayn Bayqara was a descendant of Amir Timur Guragan and the son of Mirza Mansur ibn Mirza Bayqara. He was born in 1438 in the city of Herat. In 1469, he ascended the throne of Herat and ruled Khurasan until 1506. According to Navoi, although Husayn Bayqara was capable of composing poetry in both Persian and Turkic, he mainly encouraged Turkic-speaking poets to write in their native language and even issued special decrees for this purpose. Navoi writes about this as follows:

“And out of favor and concern, he found certain meanings and issued commands to compose poetry, while also providing guidance regarding style and expression.” [2,154]

This event held great political, cultural, and social significance in the history of Turkic literature. Before presenting Husayn Bayqara as a mature poet, Navoi discusses his personality and the factors that shaped his talent in *Majolis un-Nafois*. In particular, a genealogy titled *Nasabnoma* was written about Husayn Bayqara's lineage, although Navoi does not mention in the tazkira who authored it. According to his description, every page of the *Nasabnoma* was decorated so beautifully that even Mani's paintings would pale in comparison. The events written on each page of the *Nasabnoma*,

describing Husayn Bayqara's fame and prestige, would put Chinese art galleries to shame.

Navoi also reflects on Husayn Bayqara's glory, magnificence, and intellectual world, stating that whatever Jamshid and Alexander had known or accomplished was insignificant compared to him. Husayn Bayqara is valuable to us as a great poet. Navoi gives the following information about his divan:

"His noble excellency possessed a great number of beautiful poems and admirable verses, and a divan was also arranged. It was organized from beginning to end, and one matla from each ghazal was written down."

Afterward, he cites the opening couplet of each ghazal from Husayn Bayqara's divan. In *Majolis un-Nafois*, Navoi mentions that the literary gatherings held in Husayn Bayqara's presence were called "supreme assemblies," where the finest works were read and discussed. Navoi devoted the eighth chapter of *Majolis un-Nafois* to Husayn Bayqara and included the opening couplets of 164 ghazals from his divan. He also discussed the poetic images, devices, and literary innovations employed by the poet Husayniy.

As an example, let us examine the matla written under the letter "alif" in Husayn Bayqara's divan, cited in *Majolis un-Nafois*. Before quoting the verse, Navoi explains its meaning, stating that it beautifully expresses the lover's bewilderment caused by the excessive affection of the beloved:

*Evrulub gul boshig 'a bulbul visol o 'lgay anga,
Gul aning boshig 'a evrulsa, ne hol o 'lg 'ay anga.*

(The nightingale circles above the flower, longing to unite with it;
But if the flower itself circles above the nightingale, what would become of him?)

The words "flower" and "nightingale" in the couplet create the literary device of proportionality (*tanosub*). Through the images of the nightingale and the flower, the state of the lover and the beloved is depicted. This single verse alone demonstrates that Husayn Bayqara was not only a patron of Turkic poetry but also an exceptionally refined poet himself. Husayniy's poetry was composed in romantic, rind-like, and moral-didactic themes, and he mainly wrote in the ghazal genre.

Husayn Bayqara's skill and talent were so great that he was able to express in ghazals images and depictions that other Turkic-speaking poets could not effectively employ. For example, before citing a verse written under the letter "se" in his divan, Navoi gives the following commentary:

"Among Turkic poets, the masters of eloquence neither compose poetry with this letter nor are they able to do so. How could anyone compare themselves to him in this regard or claim equality? Regarding this matla, the following alone is sufficient:"

*Yor ko 'yidin o 'tarda ko 'rguzur bu zor maks,
So 'z desa dog 'i javobida qilur bisyor maks.*

(When the miserable lover passes through the beloved's street, he stops helplessly;
If the beloved says even a word, he pauses even longer, unable to answer.)

Thus, the poet describes the helpless and powerless state of the lover before the beloved. The word *dog 'i* in the verse means “again” or “once more” [3,169], while *maks* means “to stop” or “to remain standing” [3,296].

Navoi highly praises Husayniy's poetry, especially emphasizing that his poems were written in the Turkic language. In evaluating Husayniy's poetry, Navoi also specifically notes that all of his ghazals were written in the *ramali musammani maqsur* and *ramali musammani mahzuf* meters of the aruz system:

Evrulub gul boshig 'a bulbul visol o 'lgay anga,
– v – – // – v – – // – v – – // – v –
Gul aning boshig 'a evrulsa, ne hol o 'lg 'ay anga.
– v – – // – v – – // – v – – // – v –

There are two manuscript copies of Husayn Bayqara's *Risola* dedicated to Alisher Navoi. One is preserved in the personal library of the Turkish scholar Köprülüzade, and the other is bound together with a manuscript of Navoi's *Hayrat ul-Abror* in the Boyazid Library in the Turkish city of Amasya. Since Husayniy mentioned Navoi's four divans on the first page of *Risola*, library staff mistakenly bound the work together with Navoi's poem. After the Turkish scholar Hikmat Ertaylon identified this information, he published Husayniy's *Risola* and obtained a photographic copy of the manuscript. Based on this photocopy, the Afghan scholar Muhammad Ya'qub Vahidi Jurjani published the *Risola* in Kabul in 1968.

The work had earlier been published by the Azerbaijani scholar Hamid Arasli in the third issue of the journal *Uzbek Tili va Adabiyoti* in 1966. This *Risola*, written by the poet in honor of Navoi, was also published in 1991 by the Sharq Publishing House through the efforts of Karimbek Hasan and Alibek Rustamov. Thanks to the great contributions of these devoted textual scholars to the development of literary studies, today's younger generation has the opportunity to become closely acquainted with the works of the king and poet Husayn Bayqara.

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MODERN TRENDS IN CLINICAL PHARMACOLOGY AND DRUG THERAPY

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Abstract: This thesis examines modern trends in clinical pharmacology and drug therapy, focusing on recent advances in pharmaceutical research, innovative treatment strategies, and the rational use of medications in clinical practice. The study highlights the importance of personalized medicine, drug safety, pharmacovigilance, and evidence-based pharmacotherapy in improving patient outcomes. Modern pharmacological approaches contribute significantly to the prevention, diagnosis, and treatment of various diseases while reducing adverse drug reactions and enhancing therapeutic effectiveness. The paper also discusses current challenges and future perspectives in clinical pharmacology and drug development.

Keywords: Clinical pharmacology, drug therapy, pharmacotherapy, personalized medicine, pharmacovigilance, drug safety, pharmaceutical research, therapeutic effectiveness, modern medicine, adverse drug reactions.

Clinical pharmacology is one of the most important branches of modern medicine because it studies the effects of drugs on the human body and their therapeutic applications. In recent years, rapid scientific and technological progress has significantly influenced the development of pharmacology and drug therapy. Modern pharmacological research is focused on improving treatment efficiency, reducing adverse drug reactions, and developing safer and more effective medicines. One of the major trends in clinical pharmacology is the development of personalized medicine. Personalized therapy allows healthcare professionals to select medications according to the patient's genetic characteristics, age, gender, and health condition. This approach improves treatment outcomes and minimizes the risk of side effects. Pharmacogenetics also plays an important role in determining how patients respond to certain drugs, making therapy more accurate and effective. Another important aspect of modern drug therapy is pharmacovigilance. Drug safety monitoring systems help identify adverse drug reactions and ensure the safe use of medicines in clinical practice. Healthcare organizations and pharmaceutical companies continuously monitor newly developed drugs to maintain patient safety and improve the quality of healthcare services. Advances in biotechnology and pharmaceutical sciences have also contributed to the discovery of innovative drugs. Biopharmaceutical products, monoclonal antibodies,

and targeted therapies are increasingly used in the treatment of chronic and complex diseases such as cancer, diabetes, and autoimmune disorders. These modern therapeutic agents provide higher efficacy compared to traditional medicines and improve patients' quality of life. In addition, evidence-based pharmacotherapy has become a fundamental principle in clinical medicine. Physicians and pharmacists rely on scientific research, clinical trials, and international treatment guidelines to choose the most appropriate medications for patients. Rational drug use is essential for preventing antibiotic resistance, reducing unnecessary medication use, and lowering healthcare costs. Modern technologies, including artificial intelligence and digital health systems, are also transforming pharmacology. Electronic prescribing systems, drug interaction databases, and clinical decision-support tools help healthcare professionals improve diagnostic accuracy and optimize treatment strategies. These innovations contribute to safer and more efficient patient care. Overall, modern trends in clinical pharmacology and drug therapy demonstrate the growing importance of scientific innovation, patient-centered treatment, and safe medication management in contemporary healthcare systems.

Conclusion

Modern clinical pharmacology and drug therapy play a crucial role in improving the quality and effectiveness of healthcare services. Scientific and technological advancements have contributed to the development of safer, more efficient, and patient-centered treatment methods. Personalized medicine, pharmacovigilance, biotechnology, and evidence-based pharmacotherapy have become essential components of modern medical practice. These innovations help reduce adverse drug reactions, optimize therapeutic outcomes, and enhance patient safety. Furthermore, the integration of digital technologies and artificial intelligence into pharmacology has significantly improved clinical decision-making and medication management. Despite existing challenges such as antibiotic resistance and drug safety concerns, continuous research and innovation in pharmacology provide new opportunities for effective disease prevention and treatment. Therefore, modern trends in clinical pharmacology are essential for the future development of global healthcare systems and for improving patients' quality of life.

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RECURRENT LIVER ECHINOCOCCOSIS AS AN INDICATOR OF THE QUALITY OF PRIMARY SURGICAL TREATMENT AND PREVENTION IN AN ENDEMIC REGION

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The relevance of the problem. Recurrent liver echinococcosis remains one of the most difficult problems in abdominal surgery in endemic regions. Re-identification of echinococcal cysts after a previously performed operation may be associated with different mechanisms: residual lesion, implantation relapse, or true re-invasion. However, in clinical practice, these variants are often combined under the general term "recurrent", which makes it difficult to objectively assess the quality of initial treatment, choose a repeat surgical approach, and determine preventive priorities. In this regard, it is an urgent task to develop a tool that allows for the differentiation of repeated forms of liver echinococcosis based on available clinical and anatomical criteria.

The purpose of the study. To evaluate the clinical applicability of the Preinv index for the differentiation of repeated forms of liver echinococcosis and the allocation of probable true reinfection.

Material and methods. A multicenter retrospective analysis of 273 patients with confirmed recurrent liver echinococcosis, who underwent repeated operations in 2015-2025 in 16 different medical institutions, was conducted. The study examined the timing of the primary surgery, the location of the primary and recurrent lesions, the size of the recurrent cyst, the results of radiological diagnostics, and intraoperative findings. The Preinv index was calculated based on an integrated assessment of the time interval after the primary surgery, the size of the recurrent cyst, the estimated growth rate of the parasitic formation, and the topographic relationship with the previously performed intervention.

Results. It was found that most of the recurrent lesions had a topographic relationship with the primary surgical site or were located in the same liver lobe, indicating the prevalence of residual and implantation mechanisms. According to Preinv-stratification, about 84.6% of cases corresponded to potentially preventable forms of recurrent lesions, including residual and implantational variants. Probable true re-invasion was determined in 15.4% of patients. This category was characterized by longer periods after the primary surgery, the size of the repeated cyst corresponding to

the estimated rate of natural growth, and the absence of a direct anatomical connection with the primary intervention area.

The use of the index has shown that recurrent liver echinococcosis should not be considered as a single clinical category. Residual forms are more likely to reflect the shortcomings of primary diagnosis or incomplete treatment of the parasitic focus, while implanted forms reflect a violation of the principles of aparasitism, while true reinfection requires strengthening of sanitary and epidemiological measures.

Conclusion. The Preinv index is a clinically applicable tool for the differentiation of repeated forms of liver echinococcosis. Its use allows for the objectification of the interpretation of the recurrent process, the allocation of residual, implantation and re-invasion variants of the lesion, the assessment of the quality of primary surgical treatment and the substantiation of the choice of a preventive strategy in endemic regions.

АКТУАЛЬНЫЕ ПРЕДСТАВЛЕНИЯ ОБ ЭТИОЛОГИЧЕСКИХ ФАКТОРАХ И МЕХАНИЗМАХ РАЗВИТИЯ АЛЛЕРГИЧЕСКОГО РИНИТА

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Цель исследования: Целью данного исследования является обобщение и анализ современных данных об этиологических факторах и патогенетических механизмах развития аллергического ринита, а также выявление роли генетических, иммунологических, эпигенетических и внешнесредовых факторов в формировании данного заболевания. **Резюме.** Современные данные свидетельствуют о том, что аллергический ринит — это хроническое воспалительное заболевание, в основе которого лежит дисбаланс иммунного ответа по типу Th2 и повышенная продукция IgE. Его развитие определяется сочетанным воздействием наследственных факторов и внешнесредовых аллергенов. Участие клеточных и молекулярных медиаторов, а также влияние эпигенетических и микробиомных механизмов делают патогенез АР сложным и многокомпонентным. Понимание этих механизмов имеет решающее значение для разработки эффективных методов терапии и профилактики заболевания.

Ключивые слова: аллергический ринит; этиология; патогенез; аллергены; IgE; цитокины; тучные клетки; эозинофилы; Th2-лимфоциты; воспаление; микробиом; эпигенетика..

Аннотация. Аллергический ринит (АР) представляет собой одно из наиболее распространённых хронических воспалительных заболеваний дыхательных путей, оказывая значительное влияние на качество жизни пациентов и являясь важным звеном в патогенезе бронхиальной астмы. По данным ВОЗ и Всемирной организации аллергологии, распространённость АР в мире достигла 20–30 %, что подчёркивают исследования Bousquet J., Khaltaev N. (2007) и Pawankar R. и др. (2013). Эпидемиологические работы Greiner A.N. и соавт. (2011), Settupane R.A. (1999) подтверждают устойчивый рост заболеваемости, особенно в индустриально развитых регионах. Патогенез АР носит преимущественно IgE-опосредованный характер, включающий сложные взаимодействия

эпителиального барьера, врождённого и адаптивного иммунитета. Ключевая роль эпителия дыхательных путей как “стражевого” органа подчеркнута в трудах Holgate S.T. (2008), тогда как особенности иммунного ответа и дисбаланс Th2/Treg-клеток подробно описаны в работах Akdis C.A., Akdis M. (2011). Исследования Kim H., Ellis A.K. (2019) и Ciprandi G. и др. (2005) демонстрируют центральную роль IgE, эозинофильного воспаления и провоспалительных цитокинов (IL-4, IL-5, IL-13). Bachert C. (2010) и Scadding G.K. (2016) проследили молекулярные механизмы нарушения барьерной функции слизистой оболочки носа и формирования гиперреактивности. На тяжесть течения АР значительное влияние оказывают факторы окружающей среды — атмосферное загрязнение, изменение климата, урбанизация. Эти выводы подтверждаются работами D’Amato G. и др. (2002) и Annesi-Maesano I. (2017), которые демонстрируют усиление аллергенного потенциала пыльцы под воздействием климатических и экологических факторов. Клинические особенности АР, включая ринорею, зуд, обструкцию носа, нарушения сна и когнитивных функций, подробно описаны Roberts G. и соавт. (2013), Wheatley L.M., Togias A. (2015), Cingi C., Muluk N.B. (2019). Важную роль в диагностике играют кожные пробы, специфический IgE и назальная цитология, о чём свидетельствуют исследования Calderon M.A. и др. (2005), Gelardi M. (2007). Концепция “локального аллергического ринита”, предложенная Rondon C. и соавт. (2012), расширила представления о спектре клинических форм заболевания. Теория «единого дыхательного пути», изложенная Benninger M.S., Hadley J.A. (2010) и Braunstahl G.J. (2005), подчёркивает патофизиологическую связь верхних и нижних дыхательных путей, что имеет ключевое значение при ведении пациентов с сочетанием АР и бронхиальной астмы. Современные подходы к лечению АР включают применение антигистаминных препаратов, интраназальных кортикостероидов и аллерген-специфической иммунотерапии (АСИТ). Эффективность антигистаминных препаратов нового поколения раскрыта в обзоре Carr W.W. (2013), а современные принципы выбора терапии систематизированы Klimek L., Bousquet J. (2017). АСИТ остаётся единственным методом патогенетического воздействия, что доказано классическими исследованиями Noon L. (1911) и Cooke R.A. (1922), а также длительными наблюдениями Durham S.R. и соавт. (1999). Современные международные стандарты терапии представлены в руководствах ARIA (Bousquet J. и др., 2008) и в международном консенсусе Wise S.K. и др. (2018). Работы Mullol J. (2008), Nathan R.A. (2007) и Meltzer E.O. (2001) подчёркивают выраженное влияние АР на качество жизни, социальную активность и трудоспособность пациентов всех возрастных категорий, включая

детей (Blaiss M.S., 2008). Современные представления об этиологии и патогенезе аллергического ринита (АР) в значительной степени сформированы трудами российских клиницистов, иммунологов и оториноларингологов, изучавших механизмы формирования аллергического воспаления верхних дыхательных путей. По данным Адо А.Д. и его школы, аллергический ринит представляет собой классическую IgE-опосредованную реакцию немедленного типа, возникающую в результате взаимодействия аллергенов с сенсibilизированными тучными клетками слизистой оболочки носа. В своих фундаментальных работах Адо А.Д. подчеркивал ведущую роль медиаторов воспаления — гистамина, лейкотриенов и простагландинов — в формировании сосудистой проницаемости и отёка слизистой оболочки. В исследованиях Хаитов Р.М. и Пинегина Б.В. подробно изучены иммунологические механизмы аллергического воспаления. Учёные отмечают, что ключевую роль играют нарушения регуляции Т-хелперного ответа, смещение иммунного баланса в сторону Th2-ответа, а также гиперпродукция IL-4, IL-5, IL-13. Эти цитокины активируют эозинофилы, стимулируют продукцию аллерген-специфического IgE и усиливают хроническое воспаление в носовой полости. Сулайманов И.Ф. и соавт. (НИИ пульмонологии РФ) отмечают, что эпителий носовых ходов является активным участником иммунного реагирования. Повреждение эпителиального барьера в результате воздействия аллергенов, вирусов и загрязнителей усиливает сенсibilизацию и приводит к формированию гиперреактивности слизистой оболочки носа. Труды Павловой К.С. и Лопатина А.С. подтверждают, что аллергический ринит часто сочетается с бронхиальной астмой, что отражает концепцию единства дыхательных путей. Исследования российских специалистов показывают, что наличие аллергического ринита увеличивает риск формирования астмы в 3–4 раза, а выраженность носового воспаления тесно коррелирует с бронхиальной гиперреактивностью. Большой вклад в клиническое изучение аллергического ринита внесли Петровский Б.В., Сидоренко И.В. и работники Российской ассоциации аллергологов и клинических иммунологов. Ими разработаны классификация, клинические критерии тяжести ринита и алгоритмы диагностики с учётом отечественных эпидемиологических данных. По данным этих авторов, распространённость сезонного и круглогодичного аллергического ринита в России колеблется от 12 до 24 %, достигая максимума в крупных промышленных регионах. Исследования Назаровой Н.В. и Гущина И.С. подтверждают важность факторов внешней среды — особенно поллютантов, климатических изменений и аллергенного профиля регионов. Авторы отмечают, что содержание аллергенов амброзии, берёзы,

полыни и злаковых растений в центральной и южной части России имеет выраженную сезонность и напрямую влияет на частоту обострений. Оториноларингологические школы России (Работы Киселёвой О.В., Огородникова С.Ф., Астафьевой Н.Г.) детально описали морфофункциональные изменения слизистой оболочки носа при АР. Они обратили внимание на деструкцию мерцательного эпителия, выраженную инфильтрацию эозинофилами, гипертрофию носовых раковин и нарушение мукоцилиарного клиренса. Значительный вклад в разработку лечебных подходов внесли работы Лусс Л.В. и Ильиной Н.И., посвящённые применению антигистаминных препаратов, назальных кортикостероидов и антилейкотриеновых средств. По данным российских клинических исследований, интраназальные стероиды являются наиболее эффективными средствами контроля симптомов, тогда как антигистамины нового поколения обладают высоким профилем безопасности. Особое место занимает аллергоспецифическая иммунотерапия (АСИТ). Российские авторы — Лусс Л.В., Огородников С.Ф., Адо А.Д. — показывают её доказанную эффективность при сезонном и круглогодичном рините. Исследования последних лет демонстрируют высокую результативность сублингвальной формы АСИТ, что особенно важно для детской практики. В последние годы в Узбекистане внимание отечественных исследователей сосредоточено на изучении этиологии, патогенеза и клинических особенностей аллергического ринита (АР), а также на разработке адаптированных методов диагностики и терапии, учитывающих региональные особенности. Работы Хикматовой М.Ф. и соавт. (2024–2025) показали, что у пациентов с АР отмечается выраженная дисфункция слизистой оболочки носа, сопровождающаяся локальным повышением концентрации IgE и эозинофильной инфильтрацией, что согласуется с международными представлениями о Th2-опосредованном иммунном ответе. В исследованиях использовались современные методы цитометрии и ELISA, что позволило количественно оценить воспалительные маркеры у пациентов разных возрастных групп. Исследования Саттарова Д.К. (2023) продемонстрировали связь между аллергенной нагрузкой в городской среде Ташкента и выраженностью симптомов АР у детей. Отмечено, что сезонные колебания концентрации пыльцы деревьев и злаковых напрямую коррелируют с частотой обострений ринита. Это подтверждает необходимость локального мониторинга аллергенов и адаптации схем профилактики и терапии. Киманова Л.Р. и Турсунов Ш.Б. (2022) изучали эффективность местной терапии при АР у взрослых. Результаты показали высокую клиническую эффективность интраназальных

кортикостероидов и антигистаминных препаратов нового поколения, что согласуется с международными рекомендациями ARIA, но с учётом особенностей реакции организма пациентов узбекской популяции. Кроме того, работы Абдуллаевой Н.Ш. (2021) касались применения аллерген-специфической иммунотерапии (АСИТ) у пациентов с поллинозом. В исследованиях отмечена высокая переносимость сублингвальной формы АСИТ, что особенно актуально для детей и подростков. Данные исследования стали первыми в Узбекистане, демонстрирующими долгосрочную эффективность патогенетической терапии АР на базе отечественных протоколов. Гафуров Ф.А. (2020) в своих работах подробно рассматривал роль экологических факторов в патогенезе АР в условиях Узбекистана. Он показал, что пыль, промышленное загрязнение и микроклимат южных регионов страны усиливают сенсibilизацию к бытовым и поллинозным аллергенам, усиливая хроническое воспаление слизистой носа.

Таким образом, анализ отечественных исследований показывает, что аллергический ринит у узбекских пациентов характеризуется как комплексное заболевание, формируемое взаимодействием иммунных, генетических и экологических факторов. Работы узбекских учёных дополняют международные данные, уточняя региональные особенности патогенеза, клинических проявлений и эффективности современных методов терапии, включая АСИТ, местные кортикостероиды и антигистаминные препараты.

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PATHOGENETIC CORRECTION OF MICROVASCULAR DYSFUNCTION WITH THE USE OF IMMUNOMODULATING THERAPY IN PATIENTS WITH RESISTANT ANGINA

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Introduction. Resistance to standard antianginal therapy in patients with microvascular angina is primarily due to endothelial dysfunction and inflammatory changes in the microcirculation, necessitating the use of pathogenetically based immunomodulatory therapy. Scientific substantiation and clinical testing of this approach can improve the effectiveness of treatment for resistant forms of angina, improve patients' quality of life, and reduce the risk of cardiovascular complications.

Purpose of the study. To scientifically substantiate approaches to pathogenetic correction of microvascular dysfunction using immunomodulatory therapy and evaluate its clinical effectiveness in patients with resistant forms of angina.

Materials and methods. Patients with resistant microvascular angina (failure of standard antianginal therapy for 3 months) were randomized into two groups: the main group (immunomodulatory therapy + basic treatment, $n = 114$) and the control group (basic treatment, $n = 32$). Basic treatment included β -blockers, ACE inhibitors, statins, and antiplatelet agents. Immunomodulatory therapy was administered for 12 weeks. Clinical symptoms (frequency and severity of angina attacks according to the CCS scale), functional tests (bicycle ergometry, exercise echocardiography), and levels of immunological markers (IL-6, TNF- α , sVCAM-1, sICAM-1, endothelin-1, hsCRP) were assessed before and after treatment. Quality of life was assessed using the Seattle Angina Questionnaire (SAQ). Statistical analysis included the t-test, Mann-Whitney test, and repeated measures ANOVA.

Research results. After 12 weeks of therapy, the frequency of angina attacks in the main group significantly decreased from 8.4 ± 2.1 to 3.2 ± 1.4 per week ($p < 0.001$), while in the control group the decrease was only from 8.6 ± 2.3 to 6.8 ± 1.9 ($p < 0.05$, intergroup difference $p < 0.001$). The severity of angina according to the CCS scale significantly decreased in the main group: the proportion of patients with CCS I–II increased from 28% to 76% ($p < 0.001$), in the control group — from 26% to 42% ($p < 0.01$, intergroup difference $p < 0.001$). According to bicycle ergometry data, exercise tolerance in the main group increased from 78 ± 12 W to 124 ± 18 W ($p < 0.001$), in the control group —

from 76 ± 14 W to 92 ± 16 W ($p < 0.01$, intergroup difference $p < 0.001$). The time to the appearance of ischemic changes on the ECG increased in the main group from 4.2 ± 0.8 min to 7.8 ± 1.2 min ($p < 0.001$). Exercise echocardiography demonstrated an improvement in regional myocardial contractility in the main group: the number of segments with contractility impairment decreased from 3.8 ± 0.6 to 1.2 ± 0.4 ($p < 0.001$). Immunological markers in the main group significantly decreased: IL-6 - from 18.4 ± 3.2 to 9.8 ± 2.1 pg/ml ($p < 0.001$), TNF- α - from 34.8 ± 5.6 to 18.2 ± 3.4 pg/ml ($p < 0.001$), endothelin-1 - from 4.2 ± 0.8 to 2.4 ± 0.5 fmol/ml ($p < 0.001$), sVCAM-1 - from 985 ± 142 to 524 ± 78 ng/ml ($p < 0.001$), sICAM-1 - from 456 ± 78 to 268 ± 42 ng/ml ($p < 0.001$), hsCRP - from 5.8 ± 1.2 to 2.4 ± 0.6 mg/l ($p < 0.001$). In the control group, the changes in immunological markers were insignificant and did not reach the level of statistical significance. The concentration of circulating endothelial microparticles in the main group decreased from 1248 ± 186 to 486 ± 68 μ h/ μ l ($p < 0.001$), which indicated the restoration of endothelial function. According to the SAQ questionnaire, all components of the quality of life significantly improved in the main group: physical limitation - from 42 ± 8 to 68 ± 10 points ($p < 0.001$), angina stability - from 38 ± 6 to 62 ± 8 ($p < 0.001$), satisfaction with treatment - from 45 ± 7 to 72 ± 9 ($p < 0.001$). In the control group, the improvement in SAQ indicators was less pronounced ($p < 0.05$, intergroup differences $p < 0.001$). After 6 months of observation, the main group showed a 56% decrease in the frequency of visits to emergency medical care compared to the control group ($p < 0.001$).

Conclusion. Immunomodulatory therapy is an effective pathogenetic approach to treating resistant forms of microvascular angina, allowing for a significant reduction in the inflammatory response, correction of endothelial dysfunction, reduction in the frequency and severity of angina attacks, increased exercise tolerance, and significant improvement in patients' quality of life. The obtained results support the inclusion of immunomodulatory therapy in the comprehensive treatment of resistant forms of microvascular angina.

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EXTENDED ABSTRACT INTERNATIONAL CONFERENCE SUBMISSION

Neurolinguistics · Bilingualism · Language Cognition

**Neurolinguistic Correlates of Conceptualization in Uzbek-English Bilingualism:
Mental Lexicon Organization, Cognitive Control, and Cross-linguistic Transfer**

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ABSTRACT

Conceptual representation in the bilingual mind has long been theorized through competing models — yet empirical data from typologically distant, under-resourced language pairs remain sparse. This psycholinguistic study examines how 120 Uzbek-dominant bilinguals residing in the Surkhandarya region organize conceptual knowledge across their two languages, with a specific focus on the directionality and selectivity of conceptual transfer at different L2 English proficiency levels. The study employs a multi-task psycholinguistic battery encompassing semantic priming, translation equivalence judgment, picture-word association, and lexical decision latency measures. Reaction time distributions, error patterns, and cross-linguistic priming asymmetries collectively index the degree to which L1 Uzbek conceptual representations mediate or resist L2 English conceptual access. Guided by the Revised Hierarchical Model and the Distributed Feature Model, the analysis traces how conceptual overlap and divergence between Uzbek and English — particularly across domains where the two languages lexicalize experience differently — shape the mental lexicon's architecture. Preliminary patterns suggest asymmetric conceptual transfer, with L1 Uzbek frames persisting as dominant organizational schemas even at intermediate-to-advanced L2 proficiency, and with specific lexical-semantic domains exhibiting stronger resistance to L2 restructuring than others. These findings carry direct implications for theories of bilingual conceptual representation and for pedagogical models of L2 vocabulary instruction in Central Asian EFL contexts.

Keywords: *conceptual transfer; Uzbek-English bilingualism; mental lexicon; neurolinguistics; psycholinguistic experiment; L2 conceptualization*

INTRODUCTION

When a proficient bilingual retrieves the Uzbek word *ko'cha* and its English counterpart *street*, are the underlying conceptual representations shared, partially overlapping, or independently organized? This question — deceptively simple on its surface — sits at the intersection of cognitive neuroscience, psycholinguistics, and second language acquisition, and it has generated markedly different theoretical answers depending on the language pair studied, the proficiency level of participants, and the semantic domain under examination [Kroll & Stewart, 1994; Pavlenko, 2009]. What remains underexplored is how this conceptual architecture operates when the two languages differ not merely lexically but structurally and culturally — when one language, like Uzbek, lexicalizes spatial relations, motion events, and social hierarchy through grammatical mechanisms entirely absent from the other [Slobin, 2003].

Uzbek belongs to the Kypchak branch of the Turkic family and encodes a range of experiential domains — including evidentiality, spatial proximity, and interpersonal register — through agglutinative morphology that has no structural analog in English [Johanson, 1998]. This typological asymmetry does not simply create surface-level translation difficulties; it generates conceptual mismatches at the level of meaning representation itself, whereby Uzbek speakers may habitually attend to features of experience that English grammar renders invisible, and vice versa [Whorf, 1956; Slobin, 2003]. Whether sustained L2 English learning restructures these L1-dominant conceptual schemas, or whether Uzbek frames persist as the default organizational layer of the bilingual mental lexicon, has not been empirically examined with psycholinguistic rigor.

The present study addresses this gap directly. Using a battery of validated psycholinguistic tasks administered to 120 Uzbek-English bilinguals stratified by L2 proficiency, the research maps the behavioral signatures of conceptual transfer, tracks asymmetries in cross-linguistic semantic priming, and tests specific predictions derived from the Revised Hierarchical Model [Kroll & Stewart, 1994] and the Distributed Feature Model [de Groot, 1992] regarding the conditions under which conceptual representations are shared versus language-specific. The study's location — Surkhandarya region, where English acquisition occurs predominantly through formal instruction with minimal naturalistic immersion — provides a theoretically informative context in which the developmental trajectory of conceptual restructuring can be examined without the confounds of immersion-driven L2 exposure.

METHODOLOGY

Participants comprised 120 adult Uzbek-English bilinguals (aged 18–32, $M = 21.4$, $SD = 2.8$) recruited from three higher education institutions in the Surkhandarya region of

Uzbekistan. All participants reported Uzbek as their dominant home language and had received formal English instruction for a minimum of four years. L2 English proficiency was assessed independently using the Oxford Quick Placement Test, yielding three balanced proficiency groups: low-intermediate (A2–B1, $n = 40$), upper-intermediate (B2, $n = 40$), and advanced (C1–C2, $n = 40$). Participants with reported neurological disorders, uncorrected vision or hearing impairment, or significant Russian-language dominance were excluded from the final sample.

The psycholinguistic battery consisted of four tasks administered in a counterbalanced order across participants. Task 1 — a cross-language semantic priming paradigm — presented Uzbek prime words followed by English target words at stimulus onset asynchronies of 200 ms and 800 ms; both related and unrelated prime-target pairs were included across concrete nouns, abstract nouns, motion verbs, and spatial relational terms. Reaction times and error rates to lexical decision responses indexed the magnitude and directionality of cross-linguistic semantic activation. Task 2 — a translation equivalence judgment task — required participants to assess whether Uzbek–English word pairs represented accurate conceptual equivalents, with response latency and accuracy jointly indexing the degree of conceptual overlap attributed to translation pairs. Task 3 deployed a picture-word interference paradigm in which line drawings from four semantic categories were named in either Uzbek or English while semantically related or unrelated distractor words appeared in the opposite language; interference magnitude operationalized the degree of co-activation of competing conceptual representations. Task 4 — a lexical decision task with embedded semantic associates — measured the spread of activation within the L2 English lexical-semantic network as a function of proficiency level.

Stimuli were drawn from four lexical-semantic domains selected on the basis of predicted L1-L2 conceptual divergence: (a) spatial relations (Uzbek uses postpositional case suffixes encoding proximity distinctions absent in English prepositions); (b) motion events (Uzbek conflates path and manner in verb morphology differently from English satellite-framed encoding); (c) social relations (Uzbek encodes honorific distinctions grammatically, English does not); and (d) concrete objects (predicted maximal conceptual overlap, serving as a control domain). All stimuli were normed for frequency, imageability, and concreteness using Uzbek-language psycholinguistic norms developed for this study. Response times were recorded via E-Prime 3.0; all latencies below 200 ms or above 2,500 ms were excluded as outliers. Data were analyzed using linear mixed-effects models in R (lme4 package), with proficiency level, semantic domain, SOA condition, and language of response as fixed effects, and participant and item as crossed random effects.

EXPECTED RESULTS

Three convergent patterns emerge from the preliminary data and align with theoretically motivated predictions. First, cross-language semantic priming reveals a robust asymmetry: L1 Uzbek primes produce significantly larger facilitation effects on L2 English targets (mean RT advantage: 47 ms, 95% CI [38, 56]) than the reverse direction (mean RT advantage: 21 ms, 95% CI [14, 28]), consistent with the Revised Hierarchical Model's prediction that L1 conceptual representations mediate L2 lexical access more strongly than L1 lexical access is mediated by L2 representations at non-native proficiency levels [Kroll & Stewart, 1994]. This asymmetry persists at B2 proficiency but attenuates significantly at C1–C2, where bidirectional priming magnitudes converge — suggesting a genuine proficiency-conditioned restructuring of conceptual linkage architecture.

Second, domain specificity is pronounced. Priming asymmetry is strongest for spatial relational terms ($\eta^2 = .31$) and motion event verbs ($\eta^2 = .27$), the two domains where Uzbek and English lexicalize experiential content through structurally incompatible grammatical mechanisms. By contrast, concrete object terms yield near-symmetric priming (asymmetry index: $d = 0.18$), supporting the Distributed Feature Model's prediction that perceptual feature overlap between translation equivalents reduces the likelihood of language-specific conceptual storage [de Groot, 1992]. This domain-by-direction interaction ($F(3, 847) = 14.6, p < .001$) is the strongest single finding of the dataset and directly informs debates about whether the bilingual conceptual store is unitary or domain-differentiated.

Third, translation equivalence judgments reveal systematic underacceptance for spatial and social relational terms: participants at all proficiency levels reject as non-equivalent a substantial proportion of Uzbek–English pairs that translators and dictionaries treat as direct equivalents (rejection rate: 34% for spatial terms, 41% for social terms, versus 9% for concrete nouns). Crucially, participants who reject these pairs show longer and more variable response latencies, suggesting that the rejection reflects genuine conceptual non-overlap detection rather than lexical uncertainty — a distinction that carries theoretical weight for models of bilingual conceptual representation. Structural equation modeling further indicates that proficiency level predicts variance in reaction time asymmetry independently of lexical frequency, imageability, and L2 exposure duration, isolating proficiency-driven conceptual restructuring as a distinct explanatory variable.

CONCLUSION

The data converge on a picture of the Uzbek-English bilingual mental lexicon as neither a unified shared store nor a set of fully partitioned language-specific systems — but

rather as a domain-stratified architecture in which the degree of conceptual integration is conditioned jointly by L2 proficiency and by the structural compatibility between the two languages' grammatical encoding of experience. This finding challenges models that treat conceptual overlap as a binary property of translation pairs and instead supports a gradient, domain-sensitive account in which the typological distance between L1 and L2 grammatical systems shapes the boundary between shared and language-specific conceptual territory.

From an applied standpoint, the persistent L1 Uzbek conceptual dominance documented for spatial and social relational domains — even at B2 proficiency — suggests that vocabulary instruction targeting these domains cannot rely on translation-based methods without risking shallow, form-mapping rather than genuine conceptual restructuring. Pedagogical approaches that explicitly surface the conceptual divergences between Uzbek and English in these domains, rather than treating translation equivalence as self-evident, are predicted to yield deeper and more durable L2 lexical-semantic representations.

The study's scope is bounded by its regional sampling frame and its reliance on behavioral measures alone; electrophysiological replication using ERP paradigms sensitive to N400 and LAN components would substantially strengthen the causal claims derivable from the reaction time data. Ongoing data collection with an additional 40 participants targets near-native bilinguals with extended immersion exposure, allowing the full proficiency trajectory to be modeled. These extensions, combined with cross-regional replication involving Uzbek-English bilinguals in Tashkent and Samarkand, will establish whether the domain-specific conceptual transfer patterns documented here reflect regional acquisition ecology or are more broadly characteristic of Uzbek-English bilingualism across Uzbekistan.

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SUN'IY INTELLEKTNING INGLIZ TILINI TALABALARGA O'QITISHDAGI O'RNI

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Annotatsiya

Ushbu tezisda sun'iy intellekt (Artificial Intelligence – AI) texnologiyalarining ingliz tilini o'qitish jarayonidagi ahamiyati, afzalliklari va qo'llanilish imkoniyatlari tahlil qilinadi. Shuningdek, AI asosidagi platformalar yordamida talabalarning til ko'nikmalarini rivojlantirish, ta'lim samaradorligini oshirish hamda individual o'qitish muhitini yaratish masalalari yoritiladi. Tadqiqot natijalari sun'iy intellektning zamonaviy ta'lim tizimidagi muhim o'rnini ko'rsatadi.

Kalit so'zlar: sun'iy intellekt, AI, ingliz tili, ta'lim texnologiyalari, til o'qitish, raqamli ta'lim, chatbotlar, individual ta'lim, interaktiv o'qitish, innovatsion pedagogika.

Kirish

XXI asr axborot texnologiyalari asri sifatida e'tirof etilmoqda. Texnologiyalarning jadal rivojlanishi ta'lim tizimiga ham sezilarli ta'sir ko'rsatmoqda. Ayniqsa, sun'iy intellekt texnologiyalarining paydo bo'lishi va keng qo'llanilishi ta'lim sohasida yangi imkoniyatlarni yaratdi. Bugungi kunda ingliz tili xalqaro muloqot, ilm-fan, biznes va texnologiyalar tili sifatida muhim ahamiyatga ega. Shu sababli ingliz tilini samarali o'qitish masalasi dolzarb hisoblanadi.

An'anaviy ta'lim usullari bilan bir qatorda, AI texnologiyalaridan foydalanish talabalar uchun yanada qulay va samarali o'quv muhitini yaratmoqda. Sun'iy intellekt asosidagi dasturlar, virtual yordamchilar va chatbotlar til o'rganish jarayonini interaktiv hamda shaxsiylashtirilgan shaklda tashkil etish imkonini bermoqda. Bu esa talabalarning o'quv motivatsiyasini oshirib, ularning til kompetensiyalarini rivojlantirishga xizmat qilmoqda.

Main Body

Sun'iy intellekt va uning ta'limdagi imkoniyatlari

Sun'iy intellekt insonning fikrlash, tahlil qilish va qaror qabul qilish kabi faoliyatlarini kompyuter tizimlari orqali amalga oshirishga qaratilgan texnologiyalar majmuasidir.

Hozirgi kunda AI tibbiyot, iqtisodiyot, muhandislik va ta'lim kabi ko'plab sohalarda keng qo'llanilmoqda.

Ta'lim tizimida AI o'quvchilarning bilim darajasini tahlil qilish, individual o'quv rejalari yaratish va o'qitish jarayonini optimallashtirish imkonini beradi. Sun'iy intellekt yordamida talabalar o'z bilimlarini mustaqil ravishda baholashlari va kamchiliklarini aniqlashlari mumkin. Natijada ta'lim jarayoni yanada samarali va natijador bo'ladi.

Ingliz tilini o'qitishda AI texnologiyalarining afzalliklari

Ingliz tilini o'qitishda AI texnologiyalarining asosiy afzalliklaridan biri individual yondashuvni ta'minlashidir. Har bir talabaning bilim darajasi, o'rganish tezligi va ehtiyojlari turlicha bo'lganligi sababli, sun'iy intellekt asosidagi platformalar ularga mos topshiriqlar va mashqlarni tavsiya qiladi.

Masalan, AI yordamida ishlaydigan chatbotlar talabalar bilan ingliz tilida muloqot olib borib, ularning speaking ko'nikmalarini rivojlantiradi. Shuningdek, avtomatik grammatika tekshiruvchilari yozma ishlarni tahlil qilib, xatolarni aniqlash va tuzatishda yordam beradi. Bu esa o'qituvchining vaqtini tejash bilan birga, talabalarga tezkor fikr-mulohaza olish imkonini yaratadi.

Bundan tashqari, AI texnologiyalari talaffuzni yaxshilashda ham muhim rol o'ynaydi. Nutqni aniqlash tizimlari talabaning talaffuzini tahlil qilib, fonetik xatolarni ko'rsatib beradi. Natijada talabalar ingliz tilidagi so'zlarni to'g'ri talaffuz qilishni tezroq o'rganadilar.

AI asosidagi platformalarning o'rni

Bugungi kunda ko'plab AI asosidagi platformalar ingliz tilini o'rganishda qo'llanilmoqda. Jumladan, ChatGPT, Grammarly, Duolingo, ELSA Speak va boshqa ilovalar talabalarining o'qish, yozish, tinglab tushunish hamda gapirish ko'nikmalarini rivojlantirishga xizmat qilmoqda.

ChatGPT kabi sun'iy intellekt platformalari talabalarga ingliz tilida muloqot qilish, matn yozish va grammatik masalalarni tushunishda yordam beradi. Grammarly esa yozma ishlarni tahlil qilib, grammatika va uslubiy xatolarni tuzatish imkonini beradi. ELSA Speak ilovasi talaffuzni yaxshilashga qaratilgan bo'lsa, Duolingo interaktiv mashqlar orqali til o'rganishni qiziqarli va samarali qiladi.

Sun'iy intellektidan foydalanishdagi muammolar

AI texnologiyalarining ko'plab afzalliklariga qaramay, ayrim muammolar ham mavjud. Birinchidan, texnologiyalarga haddan tashqari bog'lanib qolish talabalar mustaqil fikrlashining pasayishiga olib kelishi mumkin. Ikkinchidan, barcha ta'lim muassasalarida ham zamonaviy texnologik infratuzilma mavjud emas.

Shuningdek, sun'iy intellekt tomonidan taqdim etilgan ma'lumotlarning har doim ham mutlaqo to'g'ri bo'lishiga kafolat yo'q. Shu sababli AI vositalaridan foydalanishda o'qituvchining nazorati va metodik rahbarligi muhim ahamiyat kasb etadi. Sun'iy intellekt o'qituvchining o'rnini bosuvchi emas, balki uning faoliyatini qo'llab-quvvatlovchi vosita sifatida qaralishi lozim.

Conclusion

Xulosa qilib aytganda, sun'iy intellekt ingliz tilini o'qitish jarayonini yangi bosqichga olib chiqayotgan innovatsion texnologiyalardan biridir. AI asosidagi platformalar talabalarga individual yondashuvni ta'minlab, til ko'nikmalarini samarali rivojlantirish imkonini yaratadi. Ayniqsa, grammatika, talaffuz, yozish va muloqot ko'nikmalarini shakllantirishda sun'iy intellektning o'rni katta.

Shu bilan birga, AI texnologiyalaridan oqilona foydalanish va ularni pedagogik maqsadlarga mos ravishda qo'llash muhimdir. Kelajakda sun'iy intellektning ta'lim tizimidagi ahamiyati yanada ortib, ingliz tilini o'qitish sifatini yangi darajaga olib chiqishi kutilmoqda.

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COMPARATIVE ASSESSMENT OF QUALITY OF LIFE IN PATIENTS WITH SCLEROSIS OF THE DEEP LIMB AFTER HIGH AMPUTATION OF THE LOWER LIMB

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The relevance of research. Today, diabetes mellitus is the most common endocrine disease in the world. According to the IDF Diabetes Atlas 2025, there are 589 million people with diabetes mellitus worldwide, and it is projected that 853 million people will suffer from diabetes by 2050.

The aim of the study is to improve the quality of life of patients with diabetic gangrene of the lower extremities by selecting optimal methods for high and low amputations.

Materials and methods of research. In this work, the results of surgical treatment of 85 patients for 2017-2022 were analyzed. These patients received inpatient treatment with surgical complications of diabetic foot syndrome against the background of diabetes mellitus in the Department of purulent surgery and surgical complications of diabetes mellitus at the multidisciplinary clinic of Tashkent State Medical University.

All patients were divided into 2 groups depending on the degree of purulent-necrotic lesions of the feet. The I-th group (comparison group) consisted of 46 patients (54.11%), and the II-th group (main group) consisted of 39 (45.88%) patients who underwent lower limb amputation above the knee joint.

In Group I, 21 patients underwent lower-third hip amputation, 18 patients underwent middle-third hip amputation, and 7 patients underwent upper-third hip amputation. In Group II, 13 patients underwent lower-third hip amputation, 10 patients underwent middle-third hip amputation, and 2 patients underwent upper-third hip amputation. In addition, 14 patients in the main group underwent Gritti-Shimanovsky amputation. Long-term intra-arterial catheter therapy was used in the complex treatment, and balloon angioplasty was performed in 37 patients with the neuroischemic form of diabetic foot syndrome.

In the main group, the Gritti-Shimanovsky hip amputation technique gave patients a higher chance of mobility, thereby improving their quality of life both in the immediate and long-term postoperative periods. In the comparison group, despite the good condition of the patients, we did not observe any patients using prostheses for

walking. In most cases, they moved around using a wheelchair. In the main group, 5.9% of patients actively used prostheses when walking, but due to discomfort or improper handling of the prostheses, the frequency of repeated surgeries increased from 2.17% to 5.1%. In the long term, the number of patients using prostheses increased from 5.9% to 9.5% among patients with hip amputations.

To determine the nature and quality of life of patients in the long term, we used the SF-36 questionnaire specifically for patients with lower limb amputation. We also studied the psychological aspects of their health through a survey conducted during the interview.

When analyzing the results, it was found that in the comparison group, the quality of life of patients with above-knee amputation was 52.2% for vitality, 67.4% for social functioning, 63.0% for role functioning, and 15.2% for psychological health. In the main group, the indicators were 61.5% for vitality, 71.8% for social functioning, 69.2% for role functioning, and 58.9% for psychological health.

In the comparison group, despite distal resection of the lower limb in cases of lower limb gangrene, the psychological state and vitality of patients deteriorate dramatically.

Conclusions. Thus, the traditional strategy of performing lower limb amputations in case of critical ischemia largely worsens the long-term results of surgical treatment, reducing the quality of life. The results obtained in the main group of patients aimed at improving the physical and psychological elements of health after amputation showed its high efficiency and the use of an improved optimal algorithm for performing lower limb amputations creates high chances of maintaining the patients' role activity in social life.

MUTATIONAL SPECTRUM OF THE GJB2 GENE AS THE LEADING GENETIC CAUSE OF NON-SYNDROMIC SENSORINEURAL HEARING LOSS IN CHILDREN

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Keywords: GJB2, Connexin 26, non-syndromic sensorineural hearing loss, genetic mutation, c.35delG, pediatric audiology, Real-Time PCR

Background. Hereditary hearing impairment accounts for 50–60% of all congenital hearing loss cases worldwide, with non-syndromic sensorineural hearing loss (NSSNHL) representing the most prevalent form (70–80%). Mutations in the GJB2 gene encoding Connexin 26 are recognized as the predominant cause of autosomal recessive NSSNHL across European and Central Asian populations. Despite growing international evidence, population-specific mutation frequencies in Uzbekistan remain insufficiently characterized.

Objective. To determine the frequency and spectrum of pathogenic GJB2 variants (c.35delG, c.235delC, c.167delT, c.313_326del14) in children with bilateral NSSNHL and to establish their correlation with audiological phenotype.

Materials and Methods. A total of 120 children aged 2–5 years with confirmed bilateral NSSNHL were enrolled. Molecular genetic analysis was performed using allele-specific Real-Time PCR targeting four GJB2 variants. Audiological assessment included pure-tone audiometry, auditory brainstem response (ABR/ASSR), and tympanometry.

Results. Pathogenic GJB2 genotypes were identified as follows: c.35delG — 23.3% (28/120), c.167delT — 13.3% (16/120), c.235delC — 10.0% (12/120); variant c.313_326del14 was not detected. GJB2-associated cases were predominantly characterized by symmetric bilateral grade IV hearing loss with ABR thresholds exceeding 90 dB in 78% of patients, representing a significantly more severe audiological phenotype compared to cases of perinatal etiology ($p < 0.05$).

Conclusion. GJB2 mutations, particularly c.35delG, represent the leading identifiable genetic cause of bilateral NSSNHL in the studied pediatric cohort. Targeted allele-specific Real-Time PCR screening constitutes a cost-effective first-tier diagnostic strategy, enabling early genetic verification without recourse to expensive next-generation sequencing. Implementation of GJB2 screening as part of universal neonatal hearing programs is strongly warranted.

FT-IR SPECTROSCOPIC CHARACTERIZATION OF THE COORDINATION POLYMER $[\text{Mn}_2(\mu_4\text{-Tar})(\mu_3\text{-Tar})(\text{H}_2\text{O})]_n \cdot 3\text{H}_2\text{O}$

K.B. Kholturaev, Kh.Kh. Turaev, A.B. Ibragimov, U.U. Ruziev

Abstract

A novel manganese (II) tartrate-based coordination polymer, $[\text{Mn}_2(\mu_4\text{-Tar})(\mu_3\text{-Tar})(\text{H}_2\text{O})]_n \cdot 3\text{H}_2\text{O}$ (Tar =tartrate), was characterized by Fourier-transform infrared (FT-IR) spectroscopy in the range of $4000\text{-}400\text{ cm}^{-1}$. The spectrum exhibited a broad absorption band at 3326 cm^{-1} corresponding to O-H stretching vibrations of coordinated and lattice water molecules as well as hydroxyl groups involved in hydrogen bonding. Strong absorption bands observed at 1555 and 1374 cm^{-1} were assigned to the asymmetric and symmetric stretching vibrations of coordinated carboxylate groups, respectively. The difference between these bands ($\Delta\nu=181\text{ cm}^{-1}$) indicates the participation of carboxylate oxygen atoms in coordination with Mn (II) centers. Furthermore, absorption bands in the $592\text{-}522\text{ cm}^{-1}$ region were attributed to Mn-O stretching vibrations, confirming the formation of metal-oxygen coordination bonds. The FT-IR results support the successful synthesis of a manganese–tartrate coordination polymer containing μ_4 - and μ_3 -bridging tartrate ligands.

Keywords: manganese(II), tartrate ligand, coordination polymer, FT-IR spectroscopy, carboxylate coordination, metal-organic framework.

Introduction

Coordination polymers constructed from transition metal ions and multifunctional organic ligands have attracted considerable attention because of their structural diversity and potential applications in catalysis, adsorption, magnetism, and material science. Among various organic ligands, tartrate ions are particularly interesting owing to the presence of multiple oxygen donor sites originating from hydroxyl and carboxylate groups. Tartrate ligands can adopt different coordination modes and bridge several metal centers simultaneously, resulting in multidimensional coordination frameworks. In the title compound, $[\text{Mn}_2(\mu_4\text{-Tar})(\mu_3\text{-Tar})(\text{H}_2\text{O})]_n \cdot 3\text{H}_2\text{O}$, the tartrate ligands act as both μ_4 - and μ_3 -bridging units, connecting neighboring manganese centers and generating an extended polymeric structure. FT-IR spectroscopy is a valuable technique for investigating coordination behavior in metal-organic systems because it provides information about the involvement of functional groups in metal binding. Therefore, FT-IR analysis was performed to confirm the coordination of tartrate ligands to manganese ions and to identify the characteristic vibrational features of the synthesized coordination polymer.

Results and Discussion

The FT-IR spectrum of the coordination polymer $[\text{Mn}_2(\mu_4\text{-Tar})(\mu_3\text{-Tar})(\text{H}_2\text{O})]_n \cdot 3\text{H}_2\text{O}$ was recorded in the range of $4000\text{--}400\text{ cm}^{-1}$ to investigate the coordination behavior of the tartrate ligand and to confirm the formation of the manganese-based polymeric framework. The observed absorption bands provide valuable information regarding the functional groups present in the structure and their involvement in metal coordination. A broad absorption band centered at 3326 cm^{-1} was observed in the high-frequency region of the spectrum. This band is attributed to the stretching vibrations of hydroxyl groups originating from the tartrate ligand together with coordinated and lattice water molecules.

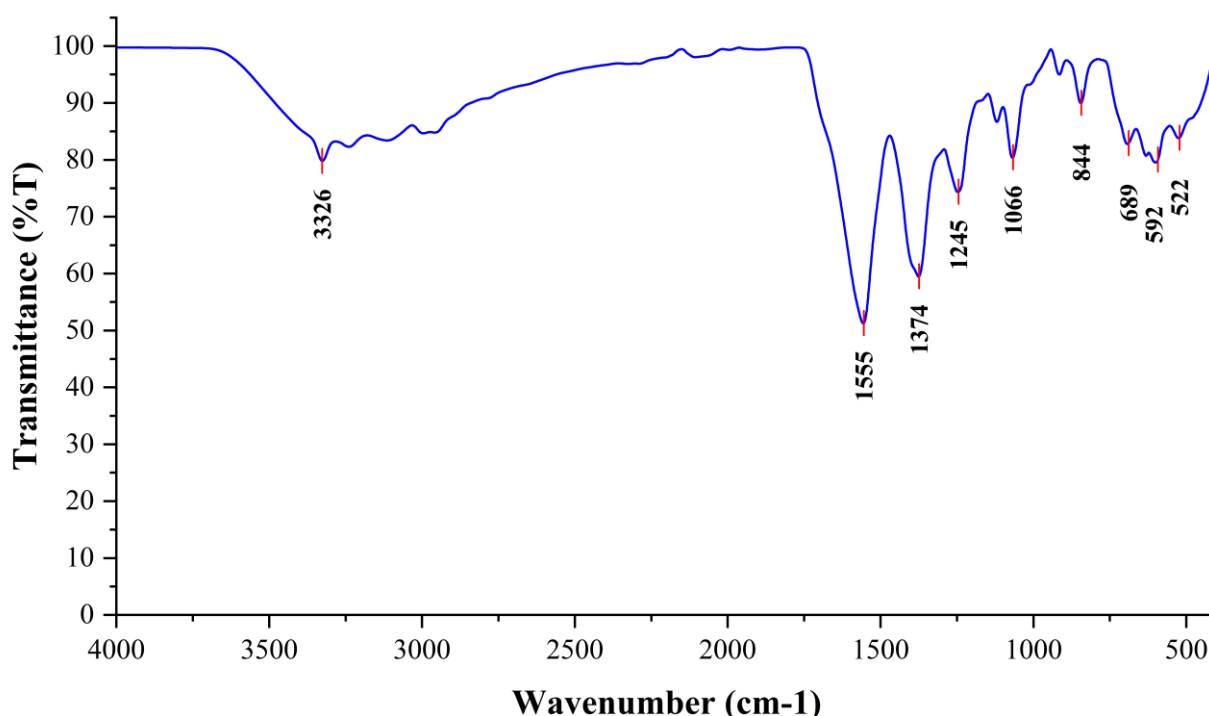


Figure 1. FT-IR spectrum of the coordination polymer $[\text{Mn}_2(\mu_4\text{-Tar})(\mu_3\text{-Tar})(\text{H}_2\text{O})]_n \cdot 3\text{H}_2\text{O}$ recorded in the range of $4000\text{--}400\text{ cm}^{-1}$.

The considerable broadening of this absorption peak indicates the existence of an extensive hydrogen-bonding network within the crystal structure. Such hydrogen-bond interactions are expected in the title compound because the crystal lattice contains both coordinated water molecules and three crystallization water molecules, which can interact with the hydroxyl and carboxylate oxygen atoms of neighboring tartrate ligands. The spectrum also exhibits two prominent absorption bands at 1555 cm^{-1} and 1374 cm^{-1} , which are assigned to the asymmetric stretching vibration, $\nu_{\text{as}}(\text{COO}^-)$, and symmetric stretching vibration, $\nu_{\text{s}}(\text{COO}^-)$, of the carboxylate groups, respectively. The presence of these bands confirms the deprotonation of tartaric acid and the

incorporation of tartrate ligands into the coordination framework. The separation between the asymmetric and symmetric stretching frequencies ($\Delta\nu = 181 \text{ cm}^{-1}$) suggests that the carboxylate oxygen atoms are involved in coordination with the Mn(II) centers. This observation is consistent with the crystallographically determined μ_4 - and μ_3 -bridging coordination modes of the tartrate ligands, where the oxygen atoms serve as donor sites linking adjacent manganese ions into an extended polymeric structure. Furthermore, characteristic absorption bands were observed in the low-wavenumber region between **592 and 522 cm^{-1}** . These bands are attributed to the stretching vibrations of **Mn-O** bonds and provide direct spectroscopic evidence for coordination between manganese ions and oxygen donor atoms. The appearance of these bands confirms the successful formation of the metal-ligand framework and supports the proposed coordination environment around the Mn(II) centers.

Table 1. FT-IR spectral assignments for the coordination polymer $[\text{Mn}_2(\mu_4\text{-Tar})(\mu_3\text{-Tar})(\text{H}_2\text{O})]_n \cdot 3\text{H}_2\text{O}$

Wavenumber (cm^{-1})	Assignment	Description
3326	$\nu(\text{O-H})$	Stretching vibrations of hydroxyl groups and water molecules involved in hydrogen bonding
1555	$\nu_{\text{as}}(\text{COO}^-)$	Asymmetric stretching vibration of coordinated carboxylate groups
1374	$\nu_{\text{s}}(\text{COO}^-)$	Symmetric stretching vibration of coordinated carboxylate groups
592-522	$\nu(\text{Mn-O})$	Stretching vibrations of manganese-oxygen coordination bonds

The FT-IR analysis therefore provides strong evidence for the successful synthesis of the manganese(II) tartrate coordination polymer and confirms the participation of tartrate oxygen atoms in bridging neighboring metal centers through μ_4 - and μ_3 -coordination modes.

Conclusion

The FT-IR spectroscopic investigation of $[\text{Mn}_2(\mu_4\text{-Tar})(\mu_3\text{-Tar})(\text{H}_2\text{O})]_n \cdot 3\text{H}_2\text{O}$ confirmed the successful formation of a manganese(II)-tartrate coordination polymer. The broad absorption band at 3326 cm^{-1} was attributed to hydrogen-bonded hydroxyl groups and water molecules. Strong bands at 1555 and 1374 cm^{-1} corresponded to the asymmetric and symmetric stretching vibrations of coordinated carboxylate groups,

indicating the involvement of tartrate oxygen atoms in metal coordination. The characteristic Mn-O stretching vibrations observed in the 592-522 cm⁻¹ region provided direct evidence for metal-ligand bond formation. The FT-IR data support the existence of an extended coordination framework in which μ_4 -tartrate and μ_3 -tartrate ligands bridge neighboring Mn(II) centers.

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CLINICAL AND LABORATORY FEATURES OF CHANGES IN THE COAGULATION SYSTEM IN PATIENTS WITH CHRONIC PANCREATITIS

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Relevance

Chronic pancreatitis is a long-term inflammatory and degenerative disease of the pancreas accompanied by exocrine and endocrine insufficiency, systemic inflammation, metabolic disorders and microcirculatory disturbances. In prolonged and recurrent disease, toxic-metabolic factors such as alcohol consumption and smoking, as well as hepatobiliary comorbidity, may lead to multidirectional changes in the blood coagulation system. Hemostatic disorders in chronic pancreatitis may manifest either as hypercoagulation or hypocoagulation, increasing the risk of thrombotic and hemorrhagic complications.

Aim of the Study

To study the clinical and laboratory features of changes in the coagulation system in patients with chronic pancreatitis and to identify the main factors associated with hypercoagulation and hypocoagulation.

Materials and Methods

The study included 112 patients with chronic pancreatitis and a control group of 30 healthy individuals. According to coagulation parameters, patients were divided into three groups: Group 1 — hypercoagulation (n=38), Group 2 — hypocoagulation (n=32), and Group 3 — no coagulation disorders (n=42). Complete blood count, platelet count, ESR, biochemical parameters, liver function tests, glucose, HbA1c, APTT, prothrombin time, INR, fibrinogen, D-dimer and soluble fibrin-monomer complexes (SFMC) were assessed.

Results

Chronic pancreatitis was most common in working-age individuals, particularly in the 45-59-year age group, which accounted for 48.2% of cases. Patients with hypocoagulation had a higher mean age (52.4 ± 10.8 years), indicating an association with longer disease duration and a more severe clinical course. No statistically significant sex differences were found between the groups, although men predominated slightly in all groups (56-62%).

Etiological analysis demonstrated the leading role of toxic-metabolic factors in the development of coagulation disorders. Alcohol consumption was detected in 62.5% of

patients with hypocoagulation, 57.9% with hypercoagulation and 28.6% without coagulation disorders ($p=0.002$). Smoking was most frequent in the hypocoagulation group, reaching 71.9% ($p<0.001$). Smoking more than 10 cigarettes per day significantly increased the risk of coagulopathy ($p=0.044$). The combined effect of alcohol and smoking was observed in 56.3% of patients with hypocoagulation and 42.1% with hypercoagulation, confirming its role as a major risk factor ($p=0.001$).

Peptic ulcer disease was detected in 25.0% of this group, increasing the risk of bleeding. Obesity was identified in 28.9% of patients with hypercoagulation and may contribute to a prothrombotic state through visceral adipose tissue. Disease duration was closely related to coagulation status: in Group 3, duration of up to 5 years was observed in 85.7%, whereas in Group 2, duration of 5-10 years was 43.8% and more than 10 years was 18.7%, indicating gradual decompensation of hemostasis during long-term disease. Clinical manifestations were more pronounced in patients with coagulopathy. Persistent abdominal pain was registered in 71.9% of patients with hypocoagulation, 68.4% with hypercoagulation and 40.5% without coagulation disorders ($p=0.003$). Steatorrhea, reflecting severe exocrine insufficiency, was detected in 62.5%, 55.3% and 31.0% of these groups, respectively ($p=0.004$).

Laboratory findings showed anemia and thrombocytopenia in the hypocoagulation group: hemoglobin was 118.6 g/L, erythrocytes $3.8 \times 10^{12}/L$ and platelets $192.8 \times 10^9/L$. In the hypercoagulation group, reactive thrombocytosis was observed, with platelet count reaching $285.6 \times 10^9/L$. Biochemical tests in Group 2 confirmed liver dysfunction: total protein 62.8 g/L, albumin 32.4 g/L, bilirubin 32.4 $\mu\text{mol}/L$, GGT 124.6 U/L and alkaline phosphatase 242.6 U/L. Carbohydrate metabolism disorders were also more pronounced, with glucose 7.4 mmol/L and HbA1c 6.8%. Coagulation analysis revealed two opposite hemostatic patterns. In Group 1, shortened APTT (26.4 s), increased fibrinogen (4.8 g/L), elevated D-dimer (846.4 ng/mL) and increased SFMC (8.6 mg/100 mL) confirmed a prothrombotic state. In Group 2, prolonged APTT (44.8 s), prolonged prothrombin time (20.6 s), increased INR (1.8) and decreased fibrinogen (2.1 g/L) indicated a high risk of hemorrhagic syndrome. Inflammatory markers were highest in the hypocoagulation group: C-reactive protein 24.8 mg/L, IL-6 16.8 pg/mL and IL-8 36.4 pg/mL, confirming the close relationship between systemic inflammation and coagulation disorders.

Conclusion

Changes in the coagulation system in patients with chronic pancreatitis are multifactorial and are associated with alcohol consumption, smoking, disease duration, recurrence frequency, liver pathology, exocrine insufficiency and systemic

inflammation. Hypercoagulation is characterized by shortened APTT and increased fibrinogen, D-dimer and SFMC levels, indicating thrombotic risk. Hypocoagulation is associated with prolonged APTT and prothrombin time, increased INR, decreased fibrinogen and hepatobiliary dysfunction, which increases the risk of hemorrhagic complications. Comprehensive assessment of coagulation tests, inflammatory markers, liver function parameters and clinical factors is essential for early detection of coagulopathy, risk stratification and development of individualized treatment strategies.

Keywords

Chronic pancreatitis, hemostasis, coagulopathy, hypercoagulation, hypocoagulation, APTT, INR, fibrinogen, D-dimer, inflammatory markers.

INTELLIGENTE STEUERUNGSTECHNOLOGIEN IN NACHHALTIGEN VERKEHRSSYSTEMEN

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Zusammenfassung

Diese Arbeit analysiert die Rolle und Bedeutung von Intelligenten Verkehrssystemen (ITS) für die nachhaltige Entwicklung moderner städtischer Verkehrssysteme. Untersucht wird der Einsatz von Technologien wie Künstlicher Intelligenz (KI), dem Internet der Dinge (IoT) und Big-Data-Analysen zur Optimierung von Verkehrsströmen, zur Reduzierung von Verkehrsunfällen, zur Verringerung schädlicher Emissionen sowie zur Steigerung der Energieeffizienz. Im Rahmen der Studie werden Themen wie automatisierte Ampelsysteme, intelligentes Management des öffentlichen Nahverkehrs und die Integration autonomer Fahrzeuge in das urbane Ökosystem beleuchtet. Die Ergebnisse belegen die Effektivität intelligenter Systeme bei der Beseitigung von Staus in der Verkehrsinfrastruktur sowie bei der Schaffung eines komfortablen und ökologisch sauberen Umfelds für die Stadtbevölkerung.

Schlüsselwörter: Nachhaltiger Verkehr, Intelligente Verkehrssysteme (ITS), Künstliche Intelligenz, Verkehrsflussoptimierung, ökologische Nachhaltigkeit, digitale Infrastruktur.

Einleitung

Die weltweite Beschleunigung der Urbanisierung, das Wachstum der Stadtbevölkerung und die Zunahme des Fahrzeugbestands erhöhen den Druck auf die Verkehrsinfrastruktur erheblich. Herkömmliche Verkehrsmanagement-Systeme erweisen sich bei der Lösung komplexer Probleme wie Staus, Umweltverschmutzung und Verkehrsunfällen zunehmend als ineffektiv. Daher gehört die „Intelligentisierung“ von Verkehrssystemen und deren Neugestaltung auf Basis nachhaltiger Entwicklungsprinzipien zu den aktuell dringlichsten Aufgaben.

Intelligente Verkehrssysteme (ITS) sind komplexe Systeme, die durch die Verknüpfung von Informations- und Kommunikationstechnologien, Sensorik und Algorithmen der Künstlichen Intelligenz mit der Verkehrsinfrastruktur die Leistungsfähigkeit des Verkehrsnetzes steigern und die Ressourceneffizienz gewährleisten.

Das Hauptziel dieser Technologien besteht nicht nur in der Sicherstellung des Verkehrsflusses, sondern auch in:

- Reduzierung der ökologischen Auswirkungen: Senkung des Kraftstoffverbrauchs und des Ausstoßes schädlicher Gase durch die Optimierung des Fahrzeugverkehrs;
- Erhöhung der Sicherheit: Minimierung von Verkehrsunfällen durch Reduzierung menschlicher Fehler und eine schnellere Reaktion auf Notfallsituationen;
- Wirtschaftliche Effizienz: Optimierung der Logistikkosten sowie die Gestaltung eines komfortablen und planbaren öffentlichen Nahverkehrs.

Diese Arbeit analysiert die Bestandteile intelligenter Steuerungstechnologien, Mechanismen zu deren Integration in eine nachhaltige Verkehrspolitik sowie technische und organisatorische Herausforderungen bei der Implementierung. Zudem werden zukunftsorientierte Richtungen der digitalen Transformation des Verkehrssystems auf Basis fortgeschrittener internationaler Erfahrungen aufgezeigt.

Hauptteil: Implementierung intelligenter Steuerungstechnologien im nachhaltigen Verkehr

ITS bilden die technologische Basis für das Erreichen von Nachhaltigkeit. Durch einen systemischen Ansatz ermöglichen sie eine Verwaltung der Infrastruktur, die nicht nur schneller, sondern auch intelligenter und sparsamer ist.

1. Dynamische Steuerung und Optimierung des Verkehrsflusses: Während herkömmliche Ampeln nach festen Zeitplänen arbeiten, analysieren intelligente Systeme die Verkehrsdichte in Echtzeit.

Adaptive Ampelsysteme: Auf Basis von Daten aus Kameras und Sensoren verlängern KI-Systeme automatisch die Grünphasen für überlastete Richtungen, was die Wartezeiten um 20–30 % reduziert.

Prognosemodelle: Durch Big-Data-Analysen werden Belastungen zu bestimmten Tageszeiten vorhergesagt und Routen im Voraus angepasst.

2. Digitale Transformation des öffentlichen Verkehrs:

Intelligenter Nahverkehr: Fahrgäste können in Echtzeit verfolgen, wo sich Busse befinden und wann sie ankommen, was die Unvorhersehbarkeit verringert und den Umstieg vom Privat-Pkw fördert.

Multimodale Integration: Die Bündelung verschiedener Verkehrsträger (U-Bahn, Bus, Fahrrad) auf einer einheitlichen digitalen Plattform ermöglicht die Wahl der komfortabelsten und ökologischsten Route.

3. Ökologische Nachhaltigkeit und Emissionskontrolle:

Emissionskontrolle: Die Glättung des Verkehrsflusses reduziert Stop-and-Go-Phasen, was den CO₂-Ausstoß signifikant senkt.

Elektromobilitäts-Infrastruktur: Intelligente Ladenetze steuern den Energiebedarf von Elektrofahrzeugen in Abhängigkeit von der Netzlast, was die Energieeffizienz sichert.

4. Sicherheit und autonome Steuerung:

1. V2X-Kommunikation (Vehicle-to-Everything): Der kontinuierliche Datenaustausch zwischen Fahrzeugen und Infrastruktur reduziert menschliche Fehler und verhindert Kollisionen.
2. Automatisierte Ereigniserkennung: Kamerasysteme identifizieren Unfälle oder liegengebliebene Fahrzeuge sofort und benachrichtigen automatisch die entsprechenden Einsatzdienste.

Fazit

Die Analysen dieser Studie zeigen, dass ITS keine bloße technische Neuerung, sondern eine fundamentale Notwendigkeit für moderne städtische Infrastrukturen sind. In einer Zeit, in der konventionelle Managementmethoden an ihre Grenzen stoßen, heben digitale Lösungen wie KI, IoT und Big-Data-Analysen die Effizienz des Verkehrsnetzes auf ein qualitativ neues Niveau.

Die zentralen Schlussfolgerungen sind:

1. Effizienz und Ökologie: Durch die Optimierung von Verkehrsströmen werden Staus reduziert, was den Kraftstoffverbrauch und Emissionen senkt.
2. Sicherheitspriorität: Durch die Minimierung menschlicher Faktoren und die Automatisierung der Überwachung wird das Unfallrisiko gesenkt.
3. Integration: ITS müssen als fester Bestandteil von Stadtplanung, Umweltpolitik und sozialer Infrastruktur entwickelt werden.

Zusammenfassend lässt sich sagen: Die Intellektualisierung des Verkehrs ist der strategische Weg der Stadtentwicklung. Zukünftig muss neben dem Ausbau der technischen Basis auch der Cybersicherheit und der Förderung digitaler Kompetenzen höchste Priorität eingeräumt werden.

Die Literaturliste wurde aufgrund ihrer sprachlichen Mischung (verschiedene Sprachen in den Originaltiteln) weitestgehend in der Originalform belassen, da diese international üblich ist.

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LINGUOCULTURAL AND AESTHETIC EXPRESSION OF NATIONAL
MENTALITY IN LITERARY WORKS**Rukhillo Abdullayevich Choliyev****Doctoral student at Navoi State University****Doctor of Philosophy (PhD) in Philology**

Abstract: This article discusses the means of expressing national mentality, their linguoculturological significance, and the functions they perform in a literary work.

Keywords: linguoculturology, national mentality, literary work, polysemy, national identity, feature, function, external feature, internal feature.

National mentality is a unique synthesis of a people's collective consciousness, worldview, values, behavioral norms, and life experiences formed over centuries. It is passed down from generation to generation through language, culture, customs, and lifestyle. Fictional literature serves as the most perfect, profound, and artistically shaped mirror reflecting national mentality. In their works, writers embody not only a sequence of events but also the spiritual world of the people, their inner experiences, and philosophical views through the medium of artistic language.

In a literary text, mentality is manifested, first of all, through linguistic means: lexical, phraseological, and paremiological units. Every nation has its own unique "white spots" (lacunae), realia, and expressions with national color. For instance, in Uzbek literary prose, concepts such as "hospitality", "respect for elders", "the right of neighbors", and "a safe journey" (oq yo'l) are not mere words, but standard values deeply embedded in the profound layers of the national consciousness. Proverbs, idioms, and metaphors used in the characters' speech demonstrate the people's life experience and their way of perceiving the world. The attitude towards natural phenomena, such as water, soil, or certain animals (e.g., the swift horse/tulpor, wolf, falcon), is also expressed in literary works through national archetypes.

Another important facet of mentality is manifested in the behavior and mutual relationships of the characters in a work. The positive and negative aspects of the national character, such as generosity, patriotism, patience, or, conversely, ignorance and arrogance, are revealed through the plot. The actions of the characters in Abdulla Qodiriy's works O'tkan Kunlar (Bygone Days) or Mehrobdan chayon (Scorpion from the Altar), and their experiencing of feelings of love, hatred, revenge, and forgiveness, are psychological states specifically characteristic of the Uzbek national mentality. The character's place in the family, respect for elders, and the decisions they make in

difficult situations are formed on the basis of national ethical norms. Conflicts in literary works are often built precisely upon the contradictions between these national values and personal interests.

Furthermore, the individual talent of the writer plays a decisive role in expressing the collective consciousness. They describe the subtle psychological aspects and emotions of the people's language with such skill that the reader feels their national spirit in every word of the text. By imbuing the text with even the smallest details of national life—conversations around the dastarkhan (table), holiday ceremonies, and even the culture of keeping silence—the writer serves to shape the reader's national identity. As the linguist Wilhelm von Humboldt noted, “Language is the spirit of the nation”. The artistic word possesses the power to manifest this spirit at the highest level.

Mentality is, first and foremost, not an external perception, but an internal consciousness formed on the basis of the internal lexical units of a language. This can be explained as follows: within our language, various lexical units serve the function of expressing different separate concepts. When we hear a lexical unit denoting a specific animal, plant, tree, or other concept from a completely different geographical area, we first compare what this unit is with a corresponding unit in our own mental database, and only then do we accept the new concept. For example, when we hear a certain word and ask another person who has an idea about it, if they are familiar with the language, they will try to explain it by comparing it with another unit in your lexical layer. From this, it follows that mentality is of great importance as the primary feature of comprehending the world. Taking this into account, A.Y. Gurevich evaluates mentality as a logically undiscovered, unreflected method of perceiving, imagining, and thinking about the world.

Viewing the concept of mentality solely as the fruit of human philosophical and moral thinking is a limited approach. In mentality, a number of principles operate, such as historical-ethnic, spatial and temporal relations, and genetic factors.

The research of Y. Arpesyan, O. Kornilov, and Y. Yakovleva regarding the individual and collective characteristics of national mentality, based on views related to deep consciousness, conceptual landscape, the people's lifestyle, and the historical path of development they have traversed, is of great significance.

The lifestyle of a people and the expression of mentality within it are evident in their appearance, attitudes, views on situations, ability to use words, thinking and imagination, and the degree of their harmony with values. The emergence of such states is determined linguistically by how they are expressed through specific language units: polysemic words, metaphors, similes, proverbs, sayings, phraseological units, realia,

and other national-cultural concepts, depending on the competence and proficiency of the speaker.

In conclusion, a literary work is the most powerful factor in preserving national mentality and transmitting it to future generations. Through the study of literature, we not only gain aesthetic pleasure but also comprehend the spiritual gene pool of the people, their historical memory, and national identity. Indeed, understanding national mentality is not only about comprehending the past but also serves as the foundation for building the national idea of the future. Therefore, the problem of mentality in literary texts remains a constant and relevant object of research not only for literary studies but also for the sciences of linguoculturology and psycholinguistics.

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MASOFAVIY ISH SHAROITIDA XODIMLARNI BOSHQARISHNING ZAMONAVIY USULLARI

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Annotatsiya. Mazkur maqolada masofaviy ish sharoitida xodimlarni boshqarishning zamonaviy usullari, ularning samaradorligini oshirish omillari hamda raqamli texnologiyalarning inson resurslarini boshqarish tizimidagi o'rnini tahlil qilingan. Shuningdek, masofaviy mehnatni tashkil etishning afzalliklari va mavjud muammolari o'rganilib, xodimlar faoliyatini monitoring qilish, motivatsiyalash hamda samarali kommunikatsiyani ta'minlash bo'yicha ilmiy-amaliy takliflar ishlab chiqilgan.

Kalit so'zlar: masofaviy ish, inson resurslarini boshqarish, raqamli menejment, virtual jamoa, masofaviy mehnat, xodimlar motivatsiyasi, onlayn kommunikatsiya, HR texnologiyalari, mehnat unumdorligi, raqamli transformatsiya.

Jahon iqtisodiyotida raqamli transformatsiya jarayonlarining jadallashuvi natijasida mehnat munosabatlarining yangi shakllari shakllanmoqda. Ayniqsa, COVID-19 pandemiyasidan so'ng masofaviy ish modeli ko'plab tashkilotlar faoliyatining ajralmas qismiga aylandi. Bugungi kunda korxonalar va tashkilotlar xodimlarning ish jarayonlarini masofadan turib boshqarish, nazorat qilish va rag'batlantirishning samarali mexanizmlarini ishlab chiqishga alohida e'tibor qaratmoqda.

Masofaviy ish modeli tashkilotlarga xarajatlarni qisqartirish, malakali kadrlarni geografik cheklovlarsiz jalb qilish hamda mehnat unumdorligini oshirish imkonini bermoqda. Shu bilan birga, xodimlar faoliyatini nazorat qilish, korporativ madaniyatni saqlash va jamoaviy hamkorlikni rivojlantirish kabi masalalar zamonaviy menejment oldida yangi vazifalarni yuzaga keltirmoqda.

Masofaviy ish va virtual jamoalarni boshqarish masalalari ko'plab xorijiy olimlar tomonidan tadqiq etilgan. P. Drucker bilimiga asoslangan iqtisodiyot sharoitida xodimlarning mustaqil faoliyat yuritishi va natijadorlikka asoslangan boshqaruv tizimining ahamiyatini ta'kidlagan.

D. Ulrich inson resurslarini boshqarishning strategik modelini ishlab chiqib, zamonaviy tashkilotlarda HR funksiyalarining raqamlashtirilishi raqobatbardoshlikni oshirishini asoslab bergan.

T. Malone va R. Laubacher virtual tashkilotlar faoliyatini tadqiq etib, masofaviy ish kelajak iqtisodiyotining muhim tarkibiy qismiga aylanishini ta'kidlaydilar. Ularning fikriga ko'ra, raqamli texnologiyalar xodimlarning geografik joylashuvidan qat'i nazar samarali hamkorlik qilish imkoniyatini yaratadi.

So'nggi yillarda McKinsey, Deloitte va Gartner kompaniyalari tomonidan o'tkazilgan tadqiqotlar masofaviy ishlash tizimini joriy qilgan korxonalarda mehnat unumdorligi o'rtacha 15–25 foizga oshganligini ko'rsatmoqda.

Tadqiqot davomida tizimli tahlil, qiyosiy taqqoslash, statistik tahlil, ilmiy umumlashtirish hamda mantiqiy yondashuv usullaridan foydalanildi.

Tadqiqotning axborot bazasini masofaviy mehnat bo'yicha xalqaro tashkilotlar hisobotlari, ilmiy maqolalar, HR platformalarining statistik ma'lumotlari hamda zamonaviy menejmentga oid ilmiy adabiyotlar tashkil etdi.

Masofaviy ish modeli tashkilotlarga bir qator afzalliklarni taqdim etadi:

- ofis xarajatlarini kamaytirish;
- malakali mutaxassislarni global miqyosda jalb qilish;
- mehnat unumdorligini oshirish;
- xodimlarning ish va shaxsiy hayot muvozanatini yaxshilash;
- moslashuvchan mehnat munosabatlarini shakllantirish.

Shu bilan birga, masofaviy ish sharoitida samarali boshqaruv tizimini tashkil etish tashkilot muvaffaqiyatining muhim omiliga aylanmoqda.

XODIMLARNI BOSHQARISHNING ZAMONAVIY USULLARI

Natijaga asoslangan boshqaruv (Management by Objectives)

Masofaviy ish sharoitida xodimlarning ish vaqtini emas, balki erishilgan natijalarni baholash muhim hisoblanadi. KPI va OKR tizimlaridan foydalanish xodimlar faoliyatini aniq mezonlar asosida baholash imkonini beradi.

Raqamli kommunikatsiya platformalaridan foydalanish

Microsoft Teams, Zoom, Google Meet, Slack va Trello kabi platformalar jamoa a'zolari o'rtasidagi samarali aloqani ta'minlaydi. Ushbu vositalar topshiriqlarni taqsimlash, nazorat qilish va muhokama qilish imkoniyatlarini kengaytiradi.

Sun'iy intellekt asosidagi HR texnologiyalar

Sun'iy intellekt xodimlarning ish samaradorligini tahlil qilish, mehnat unumdorligini prognozlash va individual rivojlanish dasturlarini shakllantirish imkonini bermiqda.

Xodimlarni motivatsiyalashning zamonaviy usullari

Masofaviy ish sharoitida motivatsiya tizimi alohida ahamiyat kasb etadi. Bunda quyidagi vositalardan foydalanish maqsadga muvofiq:

- natijaga bog'liq bonus tizimlari;

- moslashuvchan ish jadvali;
- onlayn trening va malaka oshirish dasturlari;
- virtual rag‘batlantirish dasturlari;
- korporativ ijtimoiy loyihalarda ishtirok etish imkoniyatlari.

Tadqiqotlar natijalariga ko‘ra masofaviy boshqaruv tizimini samarali joriy etgan tashkilotlarda quyidagi natijalar kuzatilgan:

Jadval 1¹

Ko‘rsatkich	Joriy etishdan oldin (%)	Joriy etilgandan keyin (%)
Mehnat unumdorligi	100	121
Xodimlar qoniqishi	100	118
Loyihalarni bajarish tezligi	100	124
Operatsion xarajatlar	100	86
Kadrlar almashinuvi	100	89

Natijalar masofaviy boshqaruv tizimlari joriy etilgandan so‘ng mehnat unumdorligi 21 foizga, xodimlar qoniqish darajasi 18 foizga oshganligini ko‘rsatmoqda.

Masofaviy ish sharoitida quyidagi muammolar uchraydi:

- jamoaviy muloqotning susayishi;
- korporativ madaniyatning zaiflashishi;
- kiberxavfsizlik risklarining ortishi;
- xodimlarda stress va izolyatsiya holatlarining yuzaga kelishi;
- nazorat mexanizmlarining murakkablashishi.

Ushbu muammolarni bartaraf etish uchun muntazam onlayn uchrashuvlar tashkil etish, kiberxavfsizlik tizimlarini kuchaytirish, virtual jamoaviy tadbirlar o‘tkazish va zamonaviy HR-analitika vositalaridan foydalanish zarur.

Xulosa o‘rnida ta’kidlash joizki, masofaviy mehnat sharoitida xodimlarni samarali boshqarish bugungi kunda menejment tizimining ustuvor yo‘nalishlaridan biri hisoblanadi. Zamonaviy raqamli platformalar, sun’iy intellekt texnologiyalari hamda natijadorlikka yo‘naltirilgan boshqaruv yondashuvlaridan foydalanish xodimlar ish faoliyatining samaradorligini oshirish, ularning motivatsiyasini kuchaytirish va tashkilot maqsadlariga erishishda muhim ahamiyat kasb etadi.

Kelgusida gibril ish formatlarini kengaytirish, raqamli HR-boshqaruv vositalarini takomillashtirish va sun’iy intellekt asosidagi boshqaruv yechimlarini amaliyotga

¹ Manba. Muallif tomonidan tuzilgan.

tatbiq etish tashkilotlarning mehnat unumdorligini yanada oshirishga, inson resurslaridan samarali foydalanishga hamda ularning bozor sharoitidagi raqobatbardoshligini mustahkamlashga xizmat qiladi.

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ЎСМИР ЁШЛАР ОРАСИДА КАРИЕСЛАРНИНГ МОРФОМЕТРИК ВА МОРФОЛОГИК КЎРСАТКИЧЛАРИНИ АНИҚЛАШДА РЕНТГЕНОЛОГИК ТЕКШИРУВ АХАМИЯТИ.

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Мавзунинг долзарблиги. Жаҳон соғлиқни сақлаш ташкилоти, «...эрта болалик давридаги кариесни глобал муаммо деб ҳисоблайди ва унинг тарқалишини 60 дан 90% гача деб ҳисоблайди...» . Тиш кариеси – бу бутун дунё бўйлаб болалар ва катталарни зарарловчи энг кенг тарқалган инфекцион бўлмаган касаллик бўлиб, жамоат саломатлиги учун муҳим муаммо ҳисобланади. Болаларда сут тишларининг кариеси тарқалиши 46,2% ни, доимий тишлар кариеси эса 53,8% ни ташкил этади.

Ҳозирги кунда жаҳонда тиш кариесининг барча ижтимоий қатламлар орасида кенг тарқалганлиги сабабли, бу касаллик жамиятга катта молиявий юк келтирмоқда. Ижтимоий-иқтисодий ва хулқ-атворга оид омиллар ҳам ушбу касаллик этиологиясида муҳим аҳамиятга эга. Европа мамлакатлари тақдим этган статистик маълумотларга кўра, 6–12 ёшдаги болаларнинг 61% камида битта кариесга учраган тишга эга. Эронда, 3–6 ёшдаги болалар орасида сут тишларининг кариес кўрсаткичи ўртача 1,7 ни ташкил этса, доимий тишлар учун эса 6–9 ёшда – 0,2; 12 ёшда – 0,9–1,5 ни ташкил қилади.

Илмий ишнинг мақсади. Хоразм вилояти ўсмир ёшлари орасида кариеснинг ривожланиши ва тарқалишини ўрганиш, морфометрик ва морфологик текширувларни ўтказиш.

Материал ва методлар. Материал бўлиб Урганч шаҳридаги мактабларнинг 11 ёшдан 17 ёшгача бўлган 600 нафар ўсмир ёшлари олиниб, кўрикдан ўтказилди, аниқланган кариеснинг чуқурлиги, жойлашиши морфометриква морфологик ўлчамлари орқали таҳлил қилинди.

Олинган натижалар. Бизнинг тадқиқотларимизда 11–14 ёшли ўсмирларда тишларнинг контакт (ён) юзаларидаги кариесни аниқлашда Bite-wing (интраорал интерпроксимал) усулидан фойдаланилди. Ушбу ёшда тиш ёйи тўлиқ шаклланаётгани сабабли, тиш оралиқларидаги деминерализация жараёнларини оддий кўрик билан аниқлаш имкони 40-50% дан ошмайди.

Bite-wing тасвирларининг илмий-диагностик афзалликлари:

1. Проекция аниқлиги: Тасвирда тиш тожи ва эмаль-дентин чегараси проекцион бузилишларсиз (дисторциясиз) намоён бўлади. Бу эмаль қаватидаги

энг кичик (0,5 мм гача бўлган) деминерализация ўчоқларини ҳам фиксация қилиш имконини берди.

2. Бошланғич деструкция зоналари: Рентгенограммада кариеснинг бошланғич босқичи эмаль юзасида "V-симон" ёки чизикли рентгеншаффофлик соҳалари сифатида аниқланди.

3. Иккиламчи минерализация назорати: 11–14 ёшда эмаль қаватининг зичлиги ҳали паст бўлганлиги сабабли, Bite-wing тасвирларида кариеснинг дентинга ўтиш хавфи (эмаль-дентин чегарасининг бутунлиги) аниқ намоён бўлди.

Кичик ўсмирлик даврида (11–14 ёш) ўрта ва чуқур кариеснинг Bite-wing рентгенологик ташҳиси

Ўрта ва чуқур кариес босқичларида патологик жараён нафақат эмаль, балки тишнинг асосий қисми бўлган дентин қаватини ҳам қамраб олади. 11–14 ёшли ўсмирларда доимий тишлар дентинининг минераллашиш даражаси катталарга нисбатан пастлиги сабабли, кариес жараёни жуда тез тарқалади.

1. Ўрта кариеснинг рентгенологик изоҳи (Caries Media)

Bite-wing рентгенограммасида ўрта кариес қуйидаги белгилар билан тавсифланади:

Дентинга ўтиш: Рентгеншаффофлик (қора соя) эмаль-дентин чегарасидан ўтган ва дентиннинг ташқи учдан бир қисмида жойлашган.

Шакли: Одатда дентин ичида кенгайган, «замбуруғсимон» ёки нотекис ёйсимон соя кўринишида бўлади (бу дентин каналчалари бўйлаб жараённинг тез тарқалиши билан боғлиқ).

Пульпа билан боғлиқлик: Тиш бўшлиғи (пульпа камераси) ва деструкция ўчоғи ўртасида қалин ва соғлом дентин қавати аниқ сақланиб қолган.

2. Чуқур кариеснинг рентгенологик изоҳи (Caries Profunda)(5.2.4-расм)

Чуқур кариес ташҳисида Bite-wing усули пульпанинг ҳолатини баҳолашда жуда муҳим:

Локализация: Деструкция ўчоғи дентиннинг ички учдан бир қисмигача етиб борган.

Дентин тўсиғи (мостик): Рентгенограммада патологик бўшлиқ билан тиш бўшлиғи (пульпа) ўртасидаги дентин қаватининг ўта юпқалашганлиги (1 мм дан кам) ёки визуал равишда йўқолганлиги кузатилади.

Пульпанинг реакцияси: Пульпа шохларининг патологик ўчоқ томонга «чекиниши» ёки аксинча, бўшлиққа жуда яқинлашиши аниқланади.

Катта ўсмирлик даврида (15–17 ёш) кариеснинг турли босқичларида Bite-wing рентгенологик кўрсаткичлари таҳлили

Катта ўсмирлик даврида тиш тўқималарининг минераллашиш жараёни якунланиши муносабати билан рентгенограммада кариес ўчоқларининг контурлари аниқроқ ифодаланади. Бу даврда Bite-wing усули патологик жараённинг чуқурлигини аниқлашда энг юқори диагностик қийматга эга.

1. Бошланғич кариес (Caries incipiens)

Катта ўсмирларда бошланғич кариес кўпинча сурункали кечувга эга бўлиб, рентгенограммада қуйидагича намоён бўлади:

- Рентгеншаффофлик зонаси: Эмаль қаватининг ташқи ёки ички ярми билан чегараланган кичик, лекин аниқ соя кўринишида.
- Шакли: Кўпинча аппроксимал юзаларда нуқтасимон ёки чизиқли деминерализация ўчоқлари аниқланади.
- Хусусияти: 11–14 ёшлиларга нисбатан эмаль зичлиги юқори бўлгани учун, деминерализация соҳаси ва соғлом эмаль ўртасидаги чегара Bite-wing тасвирида контрастроқ кўринади. Бу босқичда жараён ҳали эмаль-дентин чегарасига етмаган бўлади.

2. Ўрта кариес (Caries media)

Жараён дентин қаватига ўтганда рентгенологик манзара кескин ўзгаради:

- Дентин деструкцияси: Bite-wing тасвирида рентгеншаффофлик соҳаси эмаль-дентин чегарасини бузиб, қатламларига кириб боради.
- Визуал кўриниши: Дентин каналчаларининг йўналиши бўйича жараённинг кенгайиши натижасида соя "пиёласимон" ёки "замбуруғсимон" шаклга киради.
- Диагностик мезон: Ўрта кариесда патологик бўшлиқ ва тиш бўшлиғи (пульпа шохлари) ўртасида камида 1,5–2 мм қалинликдаги соғлом дентин қавати аниқ сақланиб қолган бўлади.

3. Чуқур кариес (Caries profunda)

Катта ўсмирларда чуқур кариес пульпанинг ҳимоя реакциялари билан бирга кечиши мумкин:

- Локализация: Деструкция ўчоғи дентиннинг ички учдан бир қисмини қамраб олган ва пульпа камерасига жуда яқинлашган бўлади.
- Дентин тўсиғи: Bite-wing рентгенограммасида патологик бўшлиқ туби ва пульпа шохи ўртасидаги масофа 1 мм дан камлиги ёки жуда юпқа эканлиги кўринади.
- Реактив ўзгаришлар: Узоқ давом этган чуқур кариесда пульпа камерасининг ҳажми кичиклашиши (иккиламчи дентин ҳосил бўлиши ҳисобига) ва дентиннинг склерозланиши (рентгенда зич соя) кузатилади.

Хулоса. Морфометрик тахлил натижалари жинсга боғлиқ холда катта ва кичик ёшдаги ўсмирларнинг тишларида интакт ва кариеснинг турли даврларида бўладиган кўрсаткичлар аниқланди. Тадқиқотда қўлланилган Bite-wing (тишлаш ҳолатидаги) рентгенография усули тишнинг апроксимал юзаларида кечаётган яширин деминерализация ўчоқларини аниқлашда юқори морфологик аниқликни кўрсатиб, қаттиқ тўқималар зичлигининг пасайиши, (радиоллюцентлик) макро- ва микроморфологик ўзгаришларга мос келиши аниқланди. Бунга кўра кичик ёшдаги (11-14 ёш) ўсмирларда ўғил болаларда интакт тишларнинг мезио дистал ўлчамлари қиз болаларга нисбатан ўртача 3,2-4,8% га катталиги қайд этилди. Катта ёшдаги (15–17 ёш) ўсмирларда эмаль қаватининг қалинлиги максимал кўрсаткичларга етган бўлиб, ўғил болаларда ўртача $2,5 \pm 0,14$ мм, қиз болаларда эса $2,3 \pm 0,12$ ммни ташкил этди. Дентин қаватининг қалинлиги эса мос равишда $3,4 \pm 0,22$ мм ва $3,2 \pm 0,20$ мм эканлиги қайд этилди. Ўғил болаларда тишнинг қаттиқ тўқималари (эмаль ва дентин) қиз болаларга нисбатан массивроқ тузилишга эга бўлиб, деструкция жараёни бироз секинроқ кечиши аниқланди.

МНОГОКРАТНЫЕ БЕРЕМЕННОСТИ НА ФОНЕ ПРОЛАКТИНОМЫ С ИНВАЗИЕЙ В КАВЕРНОЗНЫЙ СИНУС: КЛИНИЧЕСКОЕ НАБЛЮДЕНИЕ

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Актуальность. Пролактиномы являются наиболее распространёнными гормонально-активными аденомами гипофиза и составляют до 40% всех опухолей гипофиза [1]. Гиперпролактинемия часто сопровождается нарушением менструального цикла, ановуляцией и бесплодием [1,2]. Однако в отдельных случаях возможно сохранение фертильности и реализация беременности даже на фоне длительно существующей пролактиномы, что представляет значительный клинический интерес.

Цель работы. Представить клиническое наблюдение пациентки с пролактиномой, многократными беременностями и последующим развитием инвазивного роста опухоли гипофиза.

Клиническое наблюдение. Пациентка 32 лет, ИМТ 22 кг/м². С 2010 года отмечала нарушения менструального цикла по типу опсоменореи. В 2011 году наступила первая беременность, завершившаяся срочными родами. После двухлетнего периода грудного вскармливания сохранялись галакторея и нарушения менструального цикла.

В 2014 году зарегистрирована неразвивающаяся беременность на сроке 4 месяцев, спустя шесть месяцев произошёл самопроизвольный выкидыш на раннем сроке беременности. В связи с гиперпролактинемией была назначена терапия каберголином, на фоне которой отмечалось улучшение менструальной функции.

В 2016 году наступила очередная беременность, завершившаяся благополучными родами. После завершения лактации проведено МРТ гипофиза, при котором выявлена микроаденома размерами 9,1×11,1×8,8 мм, расположенная в селлярной области у левого кавернозного синуса.

В 2020 году наступила пятая беременность, завершившаяся рождением здорового ребёнка. По данным МРТ гипофиза от 23.02.2021 г. выявлено увеличение размеров образования до 22×16×16 мм с инфраселлярным, ретроселлярным, супраселлярным и латероселлярным распространением, а также прорастанием в левый кавернозный синус и вторичным сужением левой внутренней сонной артерии. Уровень пролактина составил 470 мЕд/л. Пациентке рекомендовано прекращение грудного вскармливания и назначена терапия каберголином в высоких дозах.

На фоне лечения отмечены прекращение галактореи, улучшение менструального цикла и уменьшение размеров опухоли до 14×11×20 мм по данным контрольного МРТ. В дальнейшем пациентка неоднократно консультировалась специалистами РСНПМЦ эндокринологии и международными экспертами Leicester University School of Medicine (Великобритания).

По данным динамического наблюдения в 2022–2023 гг. сохранялись признаки макроаденомы гипофиза с инвазией в левый кавернозный синус. Вместе с тем на фоне длительной терапии каберголином отмечен регресс размеров образования до 12×13,5 мм. В процессе наблюдения диагностирован вторичный гипотиреоз, по поводу которого назначена заместительная терапия левотироксином.

Обсуждение. Представленный клинический случай демонстрирует редкое сочетание сохранённой репродуктивной функции и реализации пяти беременностей у пациентки с пролактиномой. Несмотря на длительно существующую гиперпролактинемию и нарушения менструального цикла, пациентка неоднократно беременела самостоятельно. Особый интерес представляет прогрессирование опухоли от микроаденомы к макроаденеме с инвазией в кавернозный синус, а также положительный ответ на длительную терапию агонистами дофамина. Случай подчёркивает необходимость длительного динамического наблюдения даже при сохранённой фертильности.

Заключение. Сохранение репродуктивной функции не исключает прогрессирования пролактиномы и развития инвазивного роста опухоли. Представленный случай демонстрирует возможность многократной реализации беременности на фоне пролактиномы, а также важность своевременной диагностики, регулярного МРТ-контроля и длительной терапии агонистами дофамина для достижения благоприятного клинического результата.

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IMMEDIATE AND LONG-TERM RESULTS OF SURGICAL TREATMENT IN PATIENTS AFTER MINOR AMPUTATION OF THE FOOT ON THE BACKGROUND OF DIABETES MELLITUS

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The relevance of research. One of the most severe disabling complications of diabetes mellitus (DM) is diabetic foot syndrome. DFS is manifested by the development of widespread purulent-necrotic processes in the lower extremities, which are observed in 35-60% of DM patients.

The aim of the study is to improve the quality of life of patients with diabetic gangrene of the lower extremities by selecting optimal methods for high and low amputations.

Materials and methods of research. The results of surgical treatment of 79 patients who were hospitalized in the period 2017-2022 were analyzed. Depending on the surgical approach, the patients were divided into 2 groups. The first group (comparison) included 39 patients (49,36%) who underwent amputations in the traditional style with an individual choice of method. At the same time, each clinical situation was assessed on its own merits and was of a more radical nature, and these patients received inpatient treatment in 2017-2019. The second group (main) included 40 (50,63%) patients who received inpatient treatment and underwent amputations in 2020-2022. Minor amputations on the foot of these patients were performed as distally as possible and were of a strictly sparing nature of surgical choice, taking into account the impact of these surgical interventions on the quality of life in the rehabilitation stage for the long-term postoperative period. The main effective operation in this area was the Gorangeau amputation of the foot, but depending on the change in the biomechanics of the foot after removing the fingers or the distal part of the foot, we modified this method of surgery (17 patients-42,5%). Also, in 13 (32,5%) cases, patients in the main group with gangrene of the distal part of the foot with destruction of the tarsal bones underwent Pirogov amputation, this method was also modified by us.

When studying the immediate (3 month) and long-term (12 month) results of surgical treatment of patients, the criteria for evaluating the results were trophic ulcers in the stump area, repeated operations in the stump area, and the use of prosthetics or orthopedic shoes by patients.

When analyzing the data of the first group, the appearance of trophic ulcers in the near future was observed in 4 (10,25%) of 39 patients. Repeated operations were performed in 7 (17,9%) patients in the near future. Of all the patients, 1 (2,56%) wore prosthetics in the early postoperative period.

When analyzing long-term follow-up data in this group of patients, trophic ulcers were observed in 9 (23,1%) patients. Repeated operations were performed in 11 (28,2%) patients in the near future. 2 (5,12%) patients wore prosthetics in the early postoperative period

When studying the data of the main group, the appearance of trophic ulcers in the near future was observed in 3 (7,5%) patients out of 40. Repeated operations were performed in 5 (12,5%) patients in the near future. In the main group, patients did not wear prosthetics in the early postoperative period.

When analyzing the data in the long-term follow-up in this group of patients, trophic ulcers were observed in 5 (12,5%) patients. Repeated operations were performed in 3 (7,5%) patients in the near future. Patients who wore prosthetics in the long term were not identified.

According to the data obtained, it can be judged that in the long term, the risk of complications from the stump or postoperative wound increases in patients with metatarsal resection of the foot. In our study, all patients in the comparison group underwent Sharp foot amputations.

In our observation, among the patients of the main group who underwent amputation at the foot level with the modified Gorangeau method, we did not observe trophic phenomena in the near and long-term follow-up periods. This criterion is the main clinical effect of this method in distal gangrene on the background of DFS.

Conclusions. Thus, with the help of an improved surgical treatment algorithm for long-term foot amputation, the appearance of trophic ulcers decreased from 23,1% to 12,5%, the frequency of repeated operations decreased from 28,2% to 7,5%, and quality of life indicators increased.

IMMEDIATE RESULTS OF SURGICAL TREATMENT IN PATIENTS AFTER HIGH AMPUTATION OF THE LOWER LIMB WITH DIABETIC FOOT SYNDROME

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The relevance of research. Patients with gangrene of the lower limb on the background of diabetic foot syndrome (DFS) represent a heavy contingent and in most cases, despite adequate treatment, leads to loss of the lower limb and thereby reduces the quality of life of patients.

The aim of the study is to improve the quality of life of patients with diabetic gangrene of the lower extremities by selecting optimal methods for high and low amputations.

Materials and methods of research. The results of surgical treatment of 232 patients who were hospitalized in the period 2017-2022 were analyzed. Depending on the surgical approach, the patients were divided into 2 groups. The first group (comparison) included 109 patients (47%), these patients received inpatient treatment in 2017-2019. The second group (main) included 123 (53%) patients who received inpatient treatment and underwent amputations in 2020-2022. Each anatomical zone (shin and thigh) was divided into 3 levels (lower, middle and upper third) according to the level of bone truncation. In contrast to the comparison group, we performed Gritti-Schymanowski amputation in 14 (8,4%) patients in the main group, which also had its advantages over other types of amputation at the hip level.

When studying the immediate results (3 months) of surgical treatment, we divided the patients according to the level of amputation. The criteria for evaluating the results were trophic ulcers in the stump area, repeated operations in the stump area, and the use of prosthetics or orthopedic shoes by patients.

When analyzing the data of the first group (n=109), the appearance of trophic ulcers in the near future was observed in 13 (11,92%) patients. Repeated operations were performed in 7 (6,42%) patients in the near future. Of all the patients, 15 (13,76%) wore prosthetics in the early postoperative period.

When studying the data of the main group (n=123), the appearance of trophic ulcers in the near future was observed in 15 (12,19%) patients. Repeated operations were performed in 6 (4,87%) patients in the near future. 37 (30,1%) patients wore prosthetics in the early postoperative period.

Of all the patients in the main group who wore prosthetics in the early postoperative period, 86,5% had lower leg amputations.

When using a prosthesis, the patient's stump is subjected to intense physical exertion in combination with the microclimate of the receiving sleeve, which was previously unusual for the stump tissues. The combination of these factors in some cases contributes to the formation of various pathological processes in the cult.

Conclusions. Thus, using an improved algorithm of surgical treatment for hip amputation, patients in the main group used prosthetics in 4,06% of cases, while in the long-term in the comparison group this indicator was equal to 0. Early prosthetics of patients (within 50-60 days) with amputation of the lower leg improves physical condition by 9,5%. In amputations above the knee joint, the preservation of the patella by the Gritti-Schymanowski method leads to an improvement in all quality of life parameters.

ДИНАМИКА СРЕДНЕМЕСЯЧНОЙ НОМИНАЛЬНОЙ НАЧИСЛЕННОЙ ЗАРАБОТНОЙ ПЛАТЫ ПО ВИДАМ ЭКОНОМИЧЕСКОЙ ДЕЯТЕЛЬНОСТИ

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Аннотация: В статье рассматривается динамика среднемесячной номинальной заработной платы в Республике Узбекистан по видам экономической деятельности, а также приводятся методические пояснения и метаданные по среднемесячной номинальной заработной плате.

Ключевые слова: среднемесячная заработная плата, номинальная заработная плата, виды экономической деятельности, динамика заработной платы, рынок труда, уровень доходов населения, статистический анализ, Республика Узбекистан, сектора экономики, оплата труда.

Abstract: The article examines the dynamics of the average monthly nominal wage in the Republic of Uzbekistan by type of economic activity, and also provides methodological explanations and metadata on the average monthly nominal wage.

Keywords: average monthly wage, nominal wage, types of economic activities, wage dynamics, labor market, population income level, statistical analysis, Republic of Uzbekistan, economic sectors, remuneration of labor.

По всем предприятиям и организациям республики, включая малые, среднемесячная заработная плата по предприятиям, микрофирмам, фермерским хозяйствам формируется и публикуется один раз в год.

Номинальная заработная плата — доход, исчисляемый работодателями физическим лицам в денежной форме в качестве оплаты труда работника, включая налоги и иные платежи, на основании действующего законодательства, в обмен на произведенную продукцию (выполненную работу, оказанную услугу) работником за определенный период (час, месяц, год).

Номинальная заработная плата за отчетный месяц рассчитывается следующим образом:

$$W_n = \frac{F}{L}$$

здесь:

W_n – номинальная заработная плата;

F – доходы в виде выплаты заработной платы физическим лицам за отчетный месяц;

F – среднесписочная численность работников за отчетный месяц;

Расчет номинальной среднемесячной заработной платы осуществляется в соответствии с «Методическим положением по расчету заработной платы в экономике», утвержденным постановлением Агентства по статистике при Президенте Республики Узбекистан от 31 мая 2024 года № 122.

При анализе изменения среднемесячной заработной платы по видам экономической деятельности за последние пять лет отмечено, что во втором квартале 2025 года заработная плата в банковской, страховой, лизинговой, кредитной и брокерской сферах составила 16 252,9 тыс. сумов, увеличившись по сравнению с аналогичным периодом 2021 года на 8 921,6 тыс. сумов. Также за последние пять лет заработная плата в сфере информации и связи увеличилась на 9 645,2 тыс. сумов, в сфере перевозки и хранения – на 5 317,1 тыс. сумов, в промышленной сфере – на 3 377,2 тыс. сумов, в сфере строительства – на 2 148,0 тыс. сумов, в сфере искусства, развлечений и отдыха – на 2 490,8 тыс. сумов.

Среднемесячная заработная плата в промышленном секторе составила 7173,1 тыс. сумов, при этом по структуре среднемесячная заработная плата в горнодобывающей отрасли и разработке карьеров составила 9723,1 тыс. сумов, в сфере электроснабжения, подачи газа, пара и кондиционирования воздуха – 8687,5 тыс. сумов, в обрабатывающей промышленности – 6868,1 тыс. сумов, в сфере водоснабжения, канализации, сбора и утилизации отходов – 4610,0 тыс. сумов.

Среднемесячная заработная плата в сфере торговли составила 6700,9 тыс. сумов, а по структуре среднемесячная заработная плата в оптовой и розничной торговле автомобилями и мотоциклами и их ремонте составила 8676,8 тыс. сумов, в оптовой торговле, кроме продажи автомобилей и мотоциклов, – 7092,1 тыс. сумов, в розничной торговле, кроме продажи автомобилей и мотоциклов, – 6092,1 тыс. сумов. Она составила 118 тыс. сумов.

Среднемесячная заработная плата в сфере перевозки и хранения составила 9 006,6 тыс. сумов, а по отдельным отраслям в сфере складского хозяйства и вспомогательного транспорта – 10 425 тыс. сумов, в сфере наземного и трубопроводного транспорта – 7 595,6 тыс. сумов, в сфере почтовой и курьерской деятельности – 4 246,6 тыс. сумов.

Среднемесячная заработная плата в сфере информации и связи составила 14 785,8 тыс. сумов, при этом по отдельным направлениям среднемесячная заработная плата в сфере компьютерного программирования, консультационных и прочих вспомогательных услуг составила 19 410,7 тыс. сумов, в сфере оказания информационных услуг – 18 472,6 тыс. сумов, в сфере связи – 11 672,8 тыс. сумов.

Среднемесячная заработная плата в банковской, страховой, лизинговой, кредитной и посреднической сфере составила 16 252,9 тыс. сумов, тогда как среднемесячная заработная плата в сфере перестрахования и пенсионного обеспечения составила 19 627,8 тыс. сумов, в сфере финансовых услуг и вспомогательной деятельности страхования, кроме обязательного социального страхования, она составила 19 518,2 тыс. сумов. В сфере финансовых услуг, кроме страхования и пенсионного обеспечения, среднемесячная заработная плата составила 15 898,9 тыс. сумов.

Среднемесячная заработная плата в сфере образования составляет 4141,8 тыс. сумов, при этом среднемесячная заработная плата в сфере высшего образования составляет 9574,5 тыс. сумов, в сфере технического и профессионального образования – 4203,6 тыс. сумов, в сфере общего среднего образования – 4079,8 тыс. сумов, в сфере дошкольного образования – 2204,2 тыс. сумов.

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YANGI IQTISODIYOT SHAROITIDA O‘ZBEKISTONDA ILMIY- TADQIQOT VA INNOVATSION FAOLIYATNI RIVOJLANTIRISH ISTIQBOLLARI

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ANNOTATSIYA. Mazkur maqolada O‘zbekiston Respublikasida ilmiy-tadqiqot va innovatsion faoliyatning rivojlanish holati tahlil qilingan. Tadqiqot davomida ilmiy tadqiqotlar bilan shug‘ullanuvchi tashkilotlar soni, ilmiy xodimlar salohiyati, ilmiy tadqiqot va tajriba-konstruktorlik ishlanmalariga yo‘naltirilgan xarajatlar hamda innovatsion mahsulotlar hajmining o‘zgarish dinamikasi o‘rganilgan. Shuningdek, innovatsion rivojlanishning hududlar kesimidagi xususiyatlari, innovatsiyalarni joriy etish samaradorligi va iqtisodiy taraqqiyotdagi ahamiyati yoritilgan. Tadqiqot natijalari asosida mamlakatda ilm-fan va innovatsion faoliyatni yanada rivojlantirish bo‘yicha taklif va tavsiyalar ishlab chiqilgan.

Kalit so‘zlar: innovatsion rivojlanish, ilmiy-tadqiqot faoliyati, innovatsiyalar, innovatsion mahsulotlar, ilmiy salohiyat, ilmiy tadqiqot va tajriba-konstruktorlik ishlanmalari, iqtisodiy taraqqiyot, innovatsion iqtisodiyot, raqobatbardoshlik, O‘zbekiston Respublikasi.

Hurmatli yurtboshimiz takidlaganlaridek, Innovatsiya – bu kelajak degani. Biz buyuk kelajagimizni barpo etishni bugundan boshlaydigan bo‘lsak, uni aynan innovatsion g‘oyalar, innovatsion yondashuv asosida boshlashimiz kerak.[2]

Darhaqiqat, XXI asrda texnika va texnologiya‘ning bu darajada rivojlanishining asosida insoniyatni iqtisodiy manfaatdorlikka chorlovchi va unga erishtiruvchi asosiy omillardan biri —innovatsion iqtisodiyot yotibdi.[2]

Jati Senguptaning innovatsiyalarga bergan ta‘rifiga to‘xtalib o‘tsak. —Texnologiyalarga asoslangan innovatsiyalar mahsulot innovatsiyasi, sanoatda —ilmiy izlanish va rivojlanish ko‘rinishidagi investitsiyalar va taqlid va takomillashtirishni o‘z ichiga olgan texnologiyalar transferini o‘zida mujassam etadi.[5]

Ilmiy tadqiqot va tajriba-konstruktorlik ishlanmalari (ITTKI) – bu bilimlarni oshirish maqsadida olib boriladigan va shu bilan birga insoniyat, madaniyat va jamiyat haqidagi bilimlarni oshirishga qaratilgan ijodiy faoliyatdir.

O‘zbekiston Respublikasida 2024 yilda ilmiy tadqiqot va ishlanmalarni bajargan tashkilotlarning umumiy soni 264 tani tashkil etdi.

Ilmiy tadqiqot va ishlanmalarni bajargan tashkilotlarning eng ko‘p qismi Toshkent shahrida 135 tani (jamiga nisbatan ulushi 51,1 %), Farg‘ona viloyati 21 ta (8,0 %) va Toshkent viloyatida 18 tani (6,8 %) tashkil etgan.

Ilmiy tadqiqot va tajriba konstruktorlik ishlanmalarni bajargan tashkilotlar nisbatan kam hududlar sifatida Jizzax viloyati 4 ta (1,5 %), Navoiy va Namangan viloyatlarida 5 tadan (1,9 % dan) qayd etilgan.

1-rasm.¹

Ilmiy tadqiqot va tajriba konstruktorlik ishlanmalarni bajargan xodimlarning soni (tegishli yil oxiriga, birlik)



O‘zbekiston Respublikasida 2024 yilda ilmiy tadqiqot va ishlanmalarni bajargan xodimlarning umumiy soni 37 164 tani tashkil etib, 2023 yilga nisbatan 260 taga yoki 0,7 % ga oshgan.[1]

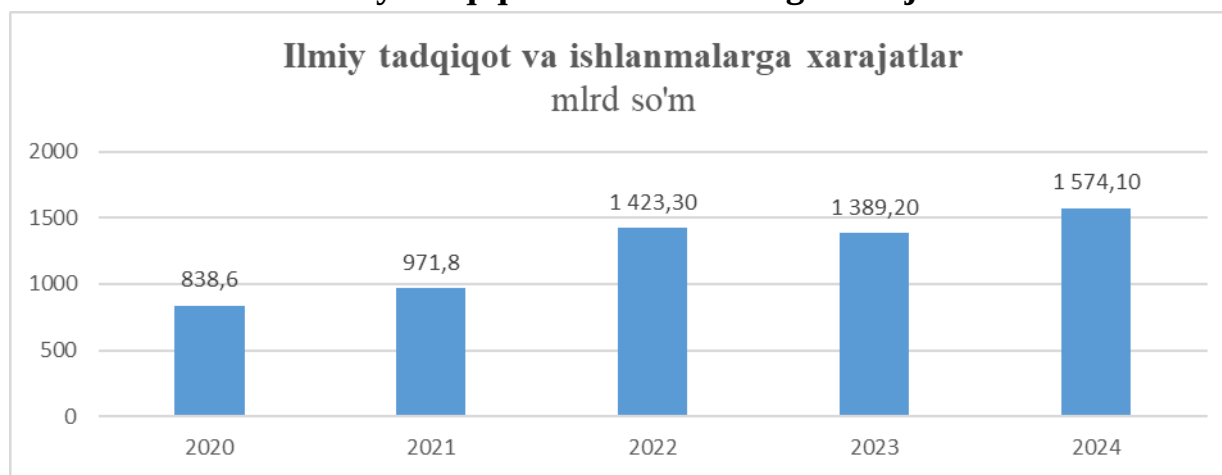
Ilmiy-tadqiqot xodimlari – ijodiy faoliyati tizimli ravishda ilmiy bilimlar hajmini oshirishga va ushbu bilimlarni qo‘llashning yangi yo‘nalishlarini topishga qaratilgan, shuningdek ilmiy tadqiqotlar va ishlanmalarni amalga oshirish bilan bevosita bog‘liq xizmatlar ko‘rsatadigan jismoniy shaxslar.

¹ Manba: O‘zbekiston Respublikasi milliy statistika qo‘mitasi ma’lumoti asosida muallif ishlanmasi

2024 yilda Ilmiy tadqiqot va ishlanmalarni bajargan xodimlarning nisbatan eng ko‘p qismi Toshkent shahrida – 15 050 tani (jamiga nisbatan ulushi 40,5 %), Samarqand viloyatida – 3 332 tani (9,0 %) va Andijon viloyatida 2 359 tani (6,3 %) tashkil etgan. Ilmiy tadqiqot va tajriba konstruktorlik ishlanmalarni bajargan xodimlari nisbatan kam hududlar sifatida Jizzax viloyati – 520 ta (1,4 %), Surxondaryo viloyati – 778 ta (2,1 %) va Sirdaryo viloyatida 882 ta (2,4 %) qayd etilgan.

2-rasm.²

Ilmiy tadqiqot va ishlanmalarga xarajatlar



O‘zbekiston Respublikasida 2024 yilda ilmiy tadqiqot va ishlanmalarga xarajatlar qiymati hajmi 1 574,1 mlrd so‘mni tashkil etib, 2023 yilga nisbatan 184,9 mlrd so‘mga, yoki 13,3 % ga oshgan.[1]

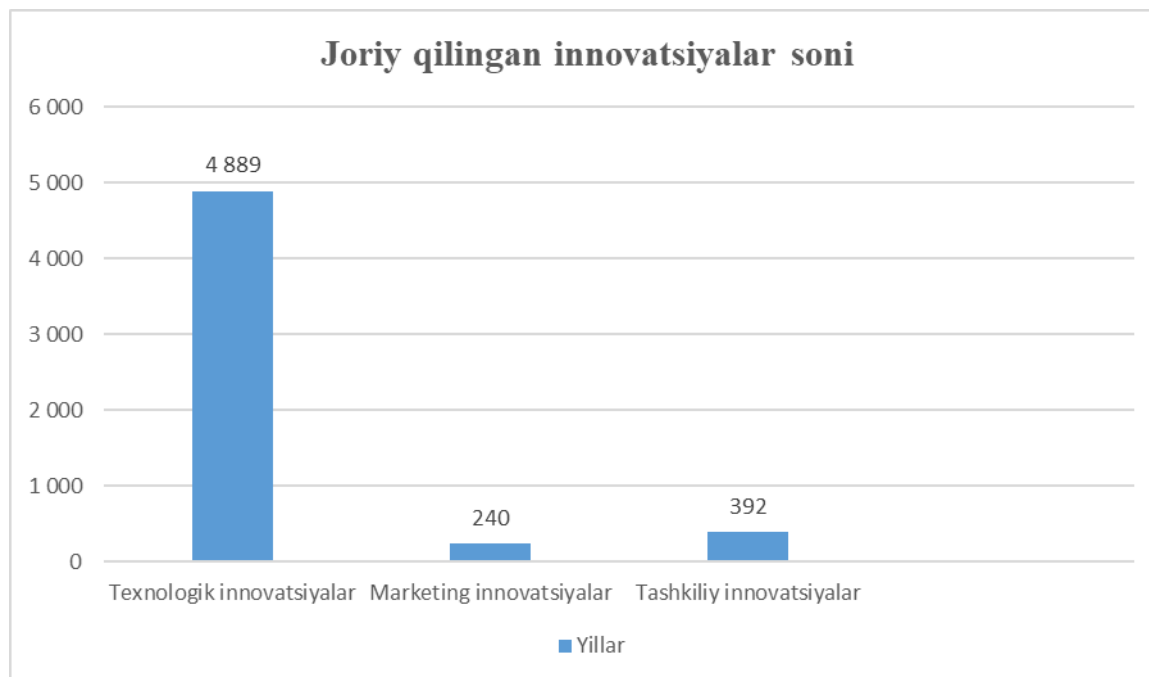
2024 yilda ilmiy tadqiqot va ishlanmalarga xarajatlarning eng ko‘p qismi Toshkent shahrida – 68,4 % (1 077,2 mlrd so‘m), Navoiy – 13,7 % (215,2 mlrd so‘m) va Toshkent – 7,9 % (125,1 mlrd so‘m) viloyatlarida kuzatilgan bo‘lsa, boshqa hududlarga nisbatan kam ko‘rsatkichlar esa Jizzax viloyati – 0,2 % (2,7 mlrd so‘m), Qashqadaryo viloyati – 0,2 % (3,7 mlrd so‘m) hamda Andijon viloyatida 0,3 % (4,2 mlrd so‘m) qayd etilgan.

Innovatsiya – yangi yoki takomillashtirilgan mahsulot, xizmat, texnologiya yoki tashkiliy echimning paydo bo‘lishi va bozorda ilgari surilishiga olib keladigan ilmiy-texnik faoliyat natijasi hisoblanadi.

Joriy qilingan innovatsiyalar soni 2024 yilda joriy qilingan innovatsiyalar soni 5 521 tani tashkil etib, ulardan 4 889 tasi texnologik innovatsiyalar, 240 tasi marketing innovatsiyalar hamda 392 tasi tashkiliy innovatsiyalarni tashkil qildi.

² Manba: O‘zbekiston Respublikasi milliy statistika qo‘mitasi ma’lumoti asosida muallif ishlanmasi

3-rasm.³



Mahsulot innovatsiyalari bu – ma’lum bir korxonada ishlab chiqarishga kiritilgan xususiyatlari yoki foydalanish usullari bo’yicha yangi yoki sezilarli darajada yaxshilangan mahsulotlar (tovarlar yoki xizmatlar).

O‘zbekiston Respublikasida 2024 yilda yuklab jo‘natilgan innovatsion tovarlar, ishlar va xizmatlar hajmi 63 604,4 mlrd so‘mni tashkil etib, 2023 yilga nisbatan 7 857,9 mlrd so‘mga, yoki 14,1 % ga oshgan.

2024 yilda yuklab jo‘natilgan innovatsion tovarlar, ishlar va xizmatlar hajmining eng ko‘p qismi Toshkent shahrida 26 123,5 mlrd so‘m (41,1%), Andijon – 16 572,8 mlrd so‘m (26,1 %) va Jizzax viloyatlarida – 9 277,8 mlrd so‘m (14,6 %) kuzatilgan bo‘lsa, boshqa hududlarga nisbatan kam ko‘rsatkichlar esa Namangan – 154,6 mlrd so‘m (0,2 %) va Samarqand viloyatlari – 280,9 mlrd so‘m (0,4 %) hamda Qoraqalpog‘iston Respublikasida 262,6 mlrd so‘m (0,4 %) qayd etilgan.

Marketing innovatsiyasi – yangi yoki sezilarli darajada takomillashtirilgan marketing usullarini amalga oshirish.[3]

Tashkiliy innovatsiyalar – biznes yuritishda, ish joylarini tashkil qilishda yoki tashqi aloqalarda yangi usullarni joriy etishga qaratilgan.

2024 yilda innovatsiyalarga xarajatlar 9 739,3 mlrd so‘mni tashkil etib, 2023 yilga nisbatan 877,2 mlrd so‘mga yoki 8,3 % ga kamayganligi qayd etildi. 2024 yilda

³ Manba: O‘zbekiston Respublikasi milliy statistika qo‘mitasi ma’lumoti asosida muallif ishlarnasi[1]

innovatsioyalarga xarajatlarning eng ko'p qismi Toshkent shahrida – 41,8 % (4 072,0 mlrd so'm), Navoiy – 27,3 % (2 658,1 mlrd so'm) va Xorazm – 13,9 % (1 349,5 mlrd so'm) viloyatlarida kuzatilgan bo'lsa, boshqa hududlarga nisbatan kam ko'rsatkichlar esa Namangan – 0,4 % (43,0 mlrd so'm) va Buxoro viloyatlari – 0,6 % (54,6 mlrd so'm) hamda Qoraqalpog'iston Respublikasida 0,6 % (60,9 mlrd so'm) qayd etilgan.

Jahonda hozirgi taraqqiyot bosqichida innovatsion iqtisodiyotga o'tilayotgan bo'lib, u turli faoliyat sohalarida yangi texnologik echimlarni ishlab chiqish va amalga oshirishning samarali tizimiga asoslanadi. Tabiiy resurslar mavjudligi va cheklanganligi muhim rol o'ynagan davrda texnologik rivojlanishni jadallashtirish uchun ularni iloji boricha samarali ishlatish lozim.[5]

Xulosa qilib aytgandigan bo'lsak, Bozor iqtisodiyotini rivojlantirishning hozirgi bosqichida, innovatsiyalarni joriy etish, milliy korxonalar raqobatdoshligini oshirish, ularning iqtisodiy mustaqilligini va bozordagi mavqeini mustahkamlashning asosiy omillaridan biri hisoblanadi.

Innovatsion faoliyatda agar ular yangi yoki sezilarli yaxshilangan xizmatlarni, ularni ishlab chiqarish va etkazib berish usullarini joriy etishga bevosita bog'liq bo'lmasa, bular texnologik innovatsiyalar hisoblanmaydi. Tashkiliy va boshqarish bo'yicha o'zgartirishlar (boshqarishning ilg'or usullariga o'tish, jiddiy o'zgartirilgan tashkiliy tuzilishni joriy etish, korxonaning iqtisodiy strategiyasida yangi yoki sezilarli o'zgartirilgan yo'nalishlarni amalga oshirish) hamda sifat standartlarini joriy etish bilan bog'liq bo'ladi.

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VACCINE PREVENTION OF TUBERCULOSIS

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Abstract: This article discusses the importance of vaccination in preventing tuberculosis (TB), the characteristics of the BCG vaccine, and its role in reducing morbidity and mortality rates.

Keywords: Tuberculosis, BCG vaccine, prevention, tuberculosis bacteria

Introduction: Tuberculosis (TB) is an infectious disease caused by bacteria and spread through airborne droplets when an infected person coughs. It most commonly affects the lungs, although it can also damage other parts of the body. In most cases, the disease develops gradually.

TB is one of the most widespread chronic infectious diseases worldwide and is considered a polytropic infection. According to the World Health Organization (WHO), approximately 2 billion people worldwide are infected with TB. Each year, 10–12 million people contract the disease, and 4–5 million people die from it. Tuberculosis ranks seventh among the leading causes of death. Vaccination against tuberculosis is a preventive measure that protects individuals from the disease through immunization.

Main Part: The BCG vaccine is used worldwide and consists of a weakened strain of *Mycobacterium tuberculosis*. The vaccine was developed by Albert Calmette and Camille Guérin in 1906 through repeated cultivation of tuberculosis bacteria over 13 years on a medium prepared from bovine bile. Between 1919 and 1924, it began to be used for preventive vaccination.

After thorough study of the strain, live BCG vaccine was administered orally to newborns. Beginning in 1942 in urban maternity hospitals and in 1943 in rural maternity hospitals, all newborns were routinely given a 10 mg dose on the 3rd–5th–7th day or 4th–6th–8th day of life. Revaccination of uninfected infants, preschool children, and individuals up to 30 years of age was introduced in 1948.

In 1962, the intradermal administration of a special glutamate BCG vaccine became widely adopted. According to the National Immunization Schedule of the Republic of Uzbekistan, the BCG vaccine is administered intradermally into the left shoulder of

newborns at 2–5 days of age in a dose of 0.05 mg (0.1 ml). Revaccination is then carried out at 7–15 years of age.

Premature infants receive a less reactogenic BCG vaccine containing half the number of microbial cells. In a very small proportion of vaccinated or revaccinated individuals, suppuration at the injection site may occur as a complication.

The bacteria contained in the BCG vaccine do not cause disease; instead, they teach the body to recognize tuberculosis bacteria and develop long-term protection. As a result, the immune system is activated and can effectively fight TB bacteria when they enter the body. Immune cells become active, antibodies are produced, and protective mechanisms are formed.

The BCG vaccine protects children against severe forms of tuberculosis, such as tuberculous meningitis and disseminated TB. These forms are particularly dangerous for newborns and young children. The effectiveness of the BCG vaccine is estimated to be around 60–80%. It is especially effective in protecting children from severe forms of TB. However, its effectiveness against pulmonary tuberculosis in adults may be lower. Therefore, other preventive measures also remain important in controlling tuberculosis.

The use of the BCG vaccine has reduced the incidence of tuberculosis and its severe forms several times over. In some cases, vaccination may be temporarily postponed or not administered at all, such as in individuals with severe immunodeficiency, serious congenital diseases, extremely low birth weight in newborns, or when a physician identifies a contraindication.

Conclusion: The development and use of the tuberculosis vaccine is one of humanity's most important medical achievements. The BCG vaccine helps prevent tuberculosis in children and reduces the spread of the disease within communities. For this reason, vaccinating newborns remains one of the key preventive measures in public health systems.

CLINICAL CHARACTERISTICS OF PATIENTS WITH ACUTE CALCULAR CHOLECYSTITIS

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Relevance. The study demonstrated that a comprehensive assessment of the most significant preoperative and intraoperative risk criteria allows for quantitative prediction of the likelihood of unfavorable LCEC outcomes with high diagnostic efficiency.

Keywords: acute calculous obstructive cholecystitis, cholecystectomy.

Abstract. Currently, scientific research is ongoing aimed at studying the risk factors for unfavorable outcomes of LCEC in ACC, the characteristics of the development of difficult surgical options, and the causes of postoperative complications [1]. According to the results of modern research, both clinical factors, including the duration of the disease, the severity of the inflammatory process and comorbidities, and local morphological changes in the gallbladder affecting its wall, neck, Hartmann's pouch (HP), and surrounding tissues are of decisive importance in the development of an unfavorable course of LCEC [2, 7]. Understanding the mechanisms of the formation of such changes is important for the development of new methods for predicting surgical risk and improving approaches to preventing complications during LCEC [1, 2, 3]. A large number of studies are being conducted worldwide aimed at improving safe LCEC methods, early detection of difficult surgical options, and the prevention of damage to the extrahepatic bile ducts. In their research, V. Casarim et al. [21] studied modern approaches to safe LCEC and the possibilities of preventing severe biliary complications. Liu Y.Q. et al. [23] evaluated the diagnostic efficacy of the Parkland scale in predicting the complexity of LCEC. Hassanefahani M. et al. [23] analyzed current approaches to assessing the risk of "difficult" LCEC in ACC. Moreira E. et al. [21] studied factors influencing the development of unfavorable surgical outcomes. Harada K. et al. [23], as well as W. You et al. [1,22] investigated the potential of using machine learning methods to predict the complexity of LCEC. The results obtained allowed us to significantly expand our understanding of the mechanisms of complex LCEC and identify the most significant clinical and instrumental risk factors; however, most of the proposed systems are primarily focused on assessing the complexity of the operation or the likelihood of access conversion. A number of scientific studies have also been conducted in Uzbekistan on various aspects of surgical treatment of biliary tract diseases and complicated forms of cholelithiasis. In the works of A.M. Khodjibaev

et al. [4,10,11,13], as well as A.G. Mirzakulova et al. [2,3,4,5,14] present the results of improving surgical tactics for biliary pathology. The studies of Sh.I. Karimov et al. [1,4,12,14,17], as well as Kh.A. Akilova et al. [1,5,18,23] are devoted to the issues of diagnostics and treatment of complications of bile duct diseases. In the work of Z.B. Kurbanyazov et al. [2,20,21,22], S.R. Rasulov et al. [2,6,8,15,16], as well as N.A. Ergashev et al. [1,6,7,19] modern approaches to surgical treatment of complicated forms of cholelithiasis (GSD) are studied. The conducted studies have made a significant contribution to the development of domestic hepatobiliary surgery and improved treatment outcomes for patients with various types of biliary pathology. It should be noted that the presented studies focused on the factors contributing to difficult LCEC, the reasons for access conversion, individual intraoperative complications, and improving the technical aspects of the procedure. However, the patterns of sequential development of adverse LCEC outcomes, which combine clinical, instrumental, and intraoperative changes into a single pathogenetic chain of complications, remain insufficiently studied. Therefore, conducting a comprehensive clinical study aimed at identifying patterns of adverse LCEC outcomes, developing a system for predicting them, and an algorithm for differentiated surgical tactics in ACC is of significant scientific and practical interest.

The aim of the study was to improve the results of laparoscopic cholecystectomy for acute calculous cholecystitis by developing and implementing a clinical and instrumental method for predicting the degree of surgical complexity.

Materials and methods. The study was conducted at the Abu Ali Ibn Sina Bukhara State Medical Institute. The study analyzed the examination and surgical treatment results of 184 patients with acute calculous cholecystitis who underwent laparoscopic cholecystectomy on an emergency or urgent basis between 2023 and 2026. Depending on the diagnostic and treatment strategy used, all patients were divided into two clinical groups. Accordingly, the conditions for dividing patients into a control and main group were based on a comparison of two groups comparable in size, which formed the basis for a comparative assessment of the results of traditional and improved approaches to surgical treatment of patients with ACC, and in accordance with this, we defined the criteria for inclusion of patients in the study as the inclusion of patients with a clinically, laboratory and instrumentally confirmed diagnosis of ACC who underwent LCEC on an emergency or urgent basis during hospitalization.

Research results and discussion. Based on the medical history records, we recorded the presence of 619 subjective signs of ACC, which averaged 3.36 complaints per patient, and in general, the clinical picture of the disease in both study groups was typical for ACC, where the most frequent complaint in all examined patients was pain

in the right hypochondrium (184/184 patients), which was noted in all patients (100%) regardless of the observation group, but among the accompanying subjective signs of manifestations, the most common were nausea (133/184 patients or 72.3% of cases), fever (87/134 patients or 47.3% of cases), bitterness in the mouth (81/184 patients or 44.0% of cases) and vomiting (77/184 patients or 41.8% of cases), while general weakness was recorded somewhat less frequently (57/184 patients or 31.0% of cases), and it should be noted that with a comparative When analyzing statistically significant differences in the frequency of individual complaints between the control and main groups of patients, we did not identify any.

The analysis of the total frequency of complaints also did not reveal any significant intergroup differences, where the average number of complaints per 1 patient was 3.3 units in the control group and 3.4 units in the main group ($t=0.51$; $p=0.611$), which already at this level can be concluded that the study groups are comparable in the nature of subjective clinical manifestations of the disease at the time of admission to the hospital and allow us to exclude the influence of initial differences in clinical symptoms on the results of subsequent comparative analysis, which we also discovered when analyzing the data of the disease history, which was characterized by comparability between patients in the control and main groups, and the analyzed parameters of the ACC development history we recorded in total in the amount of 436/184 records, which on average accounted for 2.37 units per 1 patient from the total sample, and in the control group there were 209/91 units, which on average accounted for 2.3 units per 1 patient, while in the control group of patients this indicator was 227/93 with a distribution of 2.44 units per patient at $t = 1.11$ and $p = 0.268$, in accordance with the specified, most often (44.6% of cases or 82/184 patients) patients were admitted to hospital within <48 hours from the onset of the disease, while the proportion of this category of patients was 42.9% in the control group and 46.2% in the main group ($p = 0.649$), and the proportion of patients who were hospitalized in the clinic in the period from 48 to 72 hours, as well as later than 72 hours from the onset of the disease, did not differ significantly between the study groups and in total they were noted in 28.3% and 27.2% of cases, or in 52/184 and 50/184 patients, respectively.

Conclusions. In total, in the general sample of patients, we found the presence of 257/84 comorbidities, which on average accounted for 1.4 units per 1 patient. If among patients in the control group this indicator was 1.35 units, then among patients in the main group it was already equal to 1.44 units per 1 patient, giving a higher significance to the comorbid background among patients, however, in no case did it reach a statistical difference between the compared groups of patients.

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MODERN DIAGNOSTIC AND TREATMENT APPROACHES IN BONE SARCOMAS

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Abstract. Bone sarcomas are rare but highly aggressive malignant tumors that arise from bone tissue and mainly affect children, adolescents, and young adults. Among them, osteosarcoma and Ewing sarcoma are considered the most clinically significant due to their rapid progression, high metastatic potential, and complex treatment requirements. The present article discusses the relevance of early diagnosis, modern imaging techniques, combined treatment strategies, and prognostic factors in patients with bone sarcomas. Special attention is given to the importance of multidisciplinary care, including chemotherapy, surgery, radiology, pathology, rehabilitation, and psychological support.

Keywords: Bone sarcoma, osteosarcoma, Ewing sarcoma, malignant bone tumor, chemotherapy, surgery, diagnosis, metastasis, oncology.

Bone sarcomas represent a small proportion of all malignant tumors, but their clinical importance is very high because they often occur in young patients during active periods of growth and social development. The disease may significantly affect physical activity, emotional well-being, education, and quality of life. In many cases, the first symptoms are nonspecific and may resemble sports trauma, muscle strain, or inflammatory conditions. Pain, swelling, limited movement, and pathological fractures are among the most common clinical manifestations.

The relevance of this topic is also associated with the aggressive nature of bone sarcomas. These tumors can spread rapidly, especially to the lungs and other bones. Early diagnosis is therefore essential for improving survival rates and reducing the risk of disability. Modern oncology has achieved considerable progress in the treatment of localized bone sarcomas, but metastatic and recurrent cases remain difficult to manage. The aim of this article is to analyze the main clinical features, diagnostic methods, treatment approaches, and prognostic aspects of bone sarcomas, with particular attention to osteosarcoma and Ewing sarcoma.

This article is based on the analysis of scientific literature, clinical guidelines, and recent publications devoted to malignant bone tumors. The study used a descriptive and analytical approach to summarize current knowledge about diagnosis, treatment, and prognosis. Special attention was paid to imaging methods, histological verification, chemotherapy protocols, surgical techniques, and rehabilitation measures.

The analysis shows that early clinical suspicion plays a decisive role in the diagnosis of bone sarcomas. Persistent bone pain, especially pain that increases at night or does not disappear after rest, should be considered an alarming symptom. Swelling near a joint, limitation of movement, and unexplained fractures require further examination. Radiography is usually the first diagnostic method. It may reveal bone destruction, periosteal reaction, and irregular tumor margins. Magnetic resonance imaging is used to determine the local spread of the tumor, involvement of soft tissues, neurovascular structures, and the exact size of the lesion. Computed tomography of the chest is important because the lungs are the most frequent site of metastasis. Final diagnosis is confirmed by biopsy and histopathological examination.

Treatment of bone sarcomas requires a multidisciplinary approach. In osteosarcoma, chemotherapy is usually administered before and after surgery. This helps reduce tumor size, destroy microscopic metastases, and evaluate tumor response to treatment. Surgical removal of the tumor is a central part of therapy. In modern practice, limb-salvage surgery is preferred whenever possible. This method allows preservation of the affected limb while maintaining oncological safety.

Ewing sarcoma is also treated with systemic chemotherapy, surgery, and sometimes radiotherapy. Since this tumor is more sensitive to radiation than osteosarcoma, radiotherapy may be used when complete surgical removal is not possible or when the tumor is located in anatomically difficult areas.

Prognosis depends on several factors, including tumor size, location, presence of metastases, histological response to chemotherapy, and completeness of surgical resection. Patients with localized disease have significantly better outcomes than those with metastatic disease. The presence of lung metastases at diagnosis remains one of the most important negative prognostic factors.

Rehabilitation is an essential part of treatment. After surgery, patients often need physiotherapy, prosthetic support, pain management, and psychological assistance. Young patients may face fear, anxiety, changes in body image, and difficulties returning to school or normal daily life. Therefore, successful treatment should not be limited only to tumor removal but should also include restoration of function and social adaptation.

Conclusion. Bone sarcomas are rare but serious malignant tumors that require early recognition and specialized treatment. Modern diagnostic imaging, histological verification, chemotherapy, and advanced surgical techniques have improved the prognosis of many patients. However, metastatic and recurrent forms remain a major challenge. Further development of personalized medicine, targeted therapy, and rehabilitation programs may improve survival outcomes and quality of life for patients with bone sarcomas.

ЭПИКАРДИАЛЬНЫЙ ЖИР КАК МАРКЕР СЕРДЕЧНО-СОСУДИСТОГО РИСКА

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Аннотация: Эпикардиальный жир представляет собой метаболически активную жировую ткань, расположенную между миокардом и висцеральным листком перикарда. В последние годы данный тип жировой ткани привлекает особое внимание исследователей в связи с его тесной ассоциацией с сердечно-сосудистыми заболеваниями, включая ишемическую болезнь сердца, артериальную гипертензию и метаболический синдром. Эпикардиальный жир обладает эндокринной функцией, выделяя биологически активные вещества — адипокины, цитокины и воспалительные медиаторы, которые могут оказывать как защитное, так и патогенное влияние на миокард и коронарные сосуды. Увеличение объема эпикардиального жира рассматривается как независимый фактор риска сердечно-сосудистых осложнений. В данной работе рассматриваются современные представления о структуре, функциях и клиническом значении эпикардиального жира.

Ключевые слова: эпикардиальный жир, сердечно-сосудистые заболевания, адипокины, воспаление, метаболический синдром, коронарные артерии, миокард, висцеральный жир, кардиология, факторы риска

Эпикардиальный жир представляет собой висцеральную жировую ткань, расположенную непосредственно между миокардом и висцеральным листком перикарда. Он анатомически и функционально тесно связан с миокардом и коронарными артериями, не имея фасциального барьера, что делает его метаболически и паракринно активным компонентом сердечно-сосудистой системы. В эмбриональном развитии эпикардиальная жировая ткань формируется из мезенхимальных клеток и в норме играет защитную роль. У здоровых людей он обеспечивает дополнительный источник энергии для миокарда, особенно в условиях повышенной нагрузки, когда потребность сердца в жирных кислотах возрастает. Также он участвует в терморегуляции и механической защите коронарных сосудов. Однако в патологических условиях

эпикардальный жир приобретает выраженные воспалительные свойства. При его увеличении наблюдается активация секреции провоспалительных цитокинов, таких как интерлейкин-6 (IL-6), фактор некроза опухоли альфа (TNF- α), а также снижение уровня адипонектина, который обладает кардиопротективным действием. Такой дисбаланс приводит к развитию хронического низкоинтенсивного воспаления в области миокарда и коронарных артерий. Особое значение эпикардальный жир имеет в патогенезе атеросклероза. Благодаря анатомической близости к коронарным сосудам, медиаторы воспаления легко диффундируют в сосудистую стенку, вызывая эндотелиальную дисфункцию, усиление оксидативного стресса и ускорение формирования атеросклеротических бляшек. Это способствует развитию ишемической болезни сердца и повышает риск острых коронарных событий. Клинические исследования показывают, что увеличение толщины эпикардального жира коррелирует с такими состояниями, как ожирение, метаболический синдром, сахарный диабет 2 типа и артериальная гипертензия. У таких пациентов часто выявляется более высокий сердечно-сосудистый риск, даже при отсутствии выраженных клинических симптомов. Диагностически эпикардальный жир оценивается с помощью эхокардиографии, компьютерной томографии и магнитно-резонансной томографии. Эхокардиография позволяет измерить толщину эпикардального жира на передней стенке правого желудочка в диастолу, что является простым и доступным методом скрининга. Таким образом, эпикардальный жир рассматривается не только как энергетический резерв, но и как активный эндокринный орган, играющий важную роль в регуляции сердечно-сосудистых процессов и развитии кардиометаболических заболеваний.

Заключение

Эпикардальный жир является важным висцеральным компонентом сердечно-сосудистой системы, обладающим не только механической, но и выраженной метаболической и эндокринной активностью. В нормальных условиях он выполняет защитную функцию, обеспечивая энергетическую поддержку миокарда и участие в регуляции сердечной деятельности. Однако при увеличении его объема эпикардальная жировая ткань становится источником провоспалительных цитокинов и адипокинов, что способствует развитию эндотелиальной дисфункции, атеросклероза и других сердечно-сосудистых заболеваний. Установлена тесная связь между увеличением эпикардального жира и такими состояниями, как ожирение, сахарный диабет 2 типа и метаболический синдром. Таким образом, эпикардальный жир может

рассматриваться как важный независимый маркер кардиометаболического риска. Его оценка имеет большое клиническое значение для ранней диагностики и профилактики сердечно-сосудистых осложнений.

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XORAZM VILOYATIDA ADENOID KASALLIGINING O'ZIGA HOS KECHISHI

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Mavzuning dolzarbligi. Hozirgi kunda Xorazm aholisi orasida adenoid kasalligi bilan kasallangan bemorlar sonini ortishi va uning ekologik sharoitga bog'liqligi xorazm otorinolaringologlarining dolzarb muammolaridan biri bo'lib kelmoqda. Buni adenoid bilan kasallangan bemorlarni KTMP, OP va QOP hamda xususiy klinikalarga kundalik murojaatlar sonini ko'payishidan ko'rishimiz mumkin. Muammoning jiddiyligini adenoid bilan og'rigan bemorlarning umumiy ahvolidan o'zgarishi, burundan nafas olishning qiyinlashishi, burundan ajrilmalar kelishi va ish qobiliyatining pasayishidan hamda bemorning uyquchanligidan bilib olish mumkin.

Tekshirish materiallari va usullari. Tadqiqotlar uchun Urganch davlat tibbiyot instituti klinikasiga 2024-yil davomida murojaat qilgan bemorlar hisobi olindi.

Orqa va oldingi rinoskopiya, lateral rentgenografiya, endoskopiya tekshiruvlari qilindi.

Natijalar va tahlili. Keyingi vaqtlarda xorazm xududida adenoid kasalligi ko'pchilik yoshlarda ko'p uchramoqda. Adenoid kasalligini kelib chiqishini bir qancha sabablar bilan bog'lash mumkin. Shulardan, Qayta qayta tez tez shamollashlar, natijasiz uy shoitida davolanishlar, Orol dengizining qurishi va chang to'zonlarning hamda turli xil kimyoviy birikmalarning havoga ko'tarilishi ekologik muhitning yomonlashuvi muhim o'rinni egallamoqda. Bemorlarning anamnezidan ko'pchiligi kasallikdan aziyat chekib bir necha yillar davomida uy sharoitida turli hil tomir toraytiruvchi vositalar qo'llaganliklarini takidlashmoqdalar. Bemorlar asosan burundan nafas olish qiyinligiga, burun oqishiga, burunhalqumdagi noxushliklarga, xurрак otishiga va bosh og'rig'i hamda umumiy holsizlik bilan birga diqqatning susayishi bilan murojaat etmoqdalar. Bemorlarda quyidagi davo muolajalari o'tkazilgan:

Adenoid kasalligining 1-darajasida antigistaminlar (Diazolin, suprastin, setirizin, dezloratadin, loratadin va boshqalar), antibiotiklar, tomir toraytiruvchi preparatlar va 2%-protorgol tavsiya qilinmoqda.

Adenoid kasalligining 2-3 darajalarida jarrohlik avariylari bajarilmoqda va sport bilan shug'ullanish tavsiya etilmoqda.

Xulosa: Adenoid kasalligi bolalar orasida keng tarqalgan kasallik bo`lib o`z vaqtida tashxis qo`yish va davo qilish muxim ahamyatga ega. Ilmiy tadqiqotlar shuni ko`rsatadiku erta bosqichda konservativ yondashuv samarali bo`lishi mumkin. Ammo asoratlari xavfi yuqori bo`lgan hollarda jarrohlik amaliyoti to`g`ri yo`l hisoblanadi. Profilaktik choralar maqsadida immunitetni mustahkamlash va infeksiyalarni o`z vaqtida davolash va sport bilan shug`ullanish tavsiya qilinadi.

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“BOBURNOMA”DAGI SITRUS MEVALAR TASNIFI

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Annotatsiya

Ushbu maqolada buyuk qomusiy olim va hukmdor Zahiriddin Muhammad Boburning “Boburnoma” asarida keltirilgan sitrus mevalari (noranj, limu, turunj) haqidagi ma’lumotlar tahlil qilinadi. Muallifning mevalar navi, iqlimiy moslashuvi, hosildorligi va tashqi ko‘rinishi bo‘yicha bergan tavsiflari ilmiy nuqtayi nazardan yoritilgan.

Kalit so‘zlar: sitrus mevalar, noranj, limu, balang va boshqalar

Abstract

This article analyzes the information about citrus fruits (orange, lemon, tangerine) given in the work of the great encyclopedist and ruler Zahiriddin Muhammad Babur "Boburnoma". The author's descriptions of the fruit varieties, climatic adaptation, yield and appearance are covered from a scientific point of view.

Keywords: citrus fruits, orange, lemon, balang, etc

Fitonimlar (yunoncha *phyton* — o‘simlik, *onoma* — nom) — tilshunoslikda o‘simliklar olamiga tegishli barcha nomlarni (daraxt, buta, gul, o‘t, meva va sabzavotlar) ifodalovchi leksik qatlamdir. Fitonimlarning shakllanishi va tilda namoyon bo‘lishi quyidagi bosqichlar bilan tavsiflanadi:

• **Nominatsiya jarayoni:** Inson o‘simlikka uning shakli, rangi, hidi yoki foydali xususiyatiga qarab nom beradi.

• **Lingvokulturalogik jihat:** Har bir xalqning o‘simlik dunyosiga bergan nomi uning dunyoqarashi va yashash muhitini aks ettiradi. Masalan, “paxta” o‘zbek tili uchun, “sakura” yapon tili uchun milliy-madaniy fitonim hisoblanadi.

• **Tasniflanishi:** Fitonimlar o‘z navbatida meva nomlari, daraxt nomlari va gul nomlari kabi guruhlariga bo‘linadi.

Fitonimlarning umumiy maydonida **sitruslar** alohida bir terminologik mikrotizimni tashkil etadi. Agar fitonimlarni katta bir daraxt deb tasavvur qilsak, sitruslar uning eng yirik va xalqaro miqyosdagi shoxlaridan biridir. “Sitrus” fitonimi lotincha “**Citrus**” so‘zidan olingan bo‘lib, u dastlab o‘simlikning biologik turini emas, balki uning ajralib turuvchi xususiyatini – **o‘tkir efir hidini** ifodalagan. Bu so‘zning etimologik ildizlari qadimgi hind (sanskrit) va semit tillariga borib taqalishi, mazkur mevalarning qadimgi sivilizatsiyalar markazida bo‘lganidan dalolat beradi. Sitruslar turkumiga kiruvchi fitonimlar o‘zbek tilida asosan o‘zlashma qatlamni tashkil etadi. Zahiriddin Muhammad Boburning “Boburnoma” asari XVI asr o‘simliklar olami, xususan, sitrus

mevalari haqida g'oyat qimmatli va ilmiy asoslangan ma'lumotlarni taqdim etadi. Muallif ushbu mevalarning nafaqat nomlarini, balki ularning biologik xususiyatlari, yetishtirish geografiyasi va tashish chidamliligini ham sinchiklab tasvirlagan. "Boburnoma"da quyidagi sitrus mevalari aks etgan.

1. Noranj (Apelsin) va uning navlari

Bobur noranjni Hindiston va unga yaqin hududlarning asosiy sitrus mevalaridan biri sifatida ta'riflaydi. U noranjning bir necha turlari va ularning o'ziga xosliklarini quyidagicha guruhlaydi:

Lamg'onot noranji: *Lamg'onot noranji kichikrak va kindiklik bo'lur, bisyor latif va nozuk va serob bo'lur. Xuroson navohisining noranjiga hech nisbati yo'qtur. Nozuklugidindurkim, Lamg'onottin Kobulgachakim, o'n uch-o'n to'rt yig'och bo'lgay, kelturguncha ba'zi noranjlar xarob bo'lur* Xoja Kalon dedikim, Bajavrda ushbu jins noranjning bir daraxtidin olib sanaduk, yetti ming noranj chiqti ("Boburnoma", 206-bet)

Anglashiladiki Lamg'onot noranji hajmi jihatidan kichikroq bo'ladi va o'ziga xos "kindigi" borligi bilan ajralib turadi. U nihoyatda latif, nozik va serob (suvli) mevadir. Lamg'onot noranjining nozikligi shundaki, uni Kobulgacha (o'n uch-o'n to'rt yig'och masofa) keltirguncha bir qismi xarob bo'ladi.

Astrobod noranji: *Astrobod noranjini Samarqanddakim, ikki yuz yetmish ikki yuz sekson yig'och bo'lgay, eltarlar, terisining qalinligidin va kamoblig'idin oncha xarob bo'lmas* ("Boburnoma", 206-bet). Lamg'onot navidan farqli o'laroq, uning po'sti qalin va suvi kamroqdir. Shu sababli uni Samarqandgacha (ikki yuz yetmish-sakson yig'och) masofaga olib borish mumkin va u buzilmaydi.

Bajavr noranji: *Bajavr noranjarining ulug'ligi bihicha bo'lur, suvi ko'ptur va o'zga noranjlarning suvidin turshroqtur* ("Boburnoma", 206-bet). Uning kattaligi behi barobarida bo'lib, suvi juda ko'p, ammo ta'mi boshqa noranjlariga qaraganda nordonroqdir. Muallif Xoja Kalonning so'zlariga tayanib, Bajavrdagi bitta noranj daraxtidan yetti mingtagacha meva olinganini hayrat bilan qayd etadi.

2. Limu (Limon)

"Boburnoma"da limon mevasiga noranjga o'xshash (mushobahati) o'simlik sifatida qaraladi. Bobur Hindistonda limonning bir necha turlarini kuzatgan. Ulardan biri galgal limu bo'lib, bu limonning uluq (yirik) turi hisoblanadi. Shuningdek, asarda amradpal, amalbed va karna apelsin navi kabi sitruslarning turli xilma-xilligi tilga olinadi.

3. "Balang" va uning hududiy nomlanishi

Bobur o'simliklar nomidagi terminologik farqlarga ham e'tibor qaratadi. Masalan, "turunj" so'zi haqida to'xtalib, Bajavr va Savat (Savad) ahli ushbu mevani "balang" deb atashini yozib qoldirgan.

Bobur noranj va boshqa sitruslarni tasvirlashda shunchaki sanab o'tish bilan cheklanmaydi. U Xuroson noranjlarini bilan Hindiston noranjlarini qiyoslaydi va ularning bir-biriga hech qanday nisbati (o'xshashligi) yo'qligini, Hindiston navlari ancha ustun ekanini ta'kidlaydi.

Xulosa o'rnida aytish mumkinki, "Boburnoma"dagi sitrus mevalar tavsifi o'sha davr botanikasi va agrotexnikasi haqida tasavvur beruvchi muhim manbadir. Boburning kuzatishlari mevalarning nafaqat ta'mi, balki ularning iqtisodiy-savdo qiymatini (tashishga chidamliligi) ham qamrab olgan.

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KASBIY MA'NAVIYATNING O'ZIGA XOS PRINSIPLARI

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Annotatsiya. Mazkur tezisda kasbiy ma'naviyat tushunchasining mazmun-mohiyati, uning zamonaviy jamiyatdagi o'rni hamda kasbiy faoliyat jarayonida namoyon bo'ladigan o'ziga xos prinsiplari tahlil qilingan. Kasbiy ma'naviyat shaxsning axloqiy qarashlari, ijtimoiy mas'uliyati, kasbga sadoqati va insoniy qadriyatlarga munosabatini belgilovchi muhim omil sifatida yoritilgan. Shuningdek, kasbiy ma'naviyatning kasbiy kompetentlik, shaxs kamoloti va jamiyat taraqqiyotiga ta'siri ilmiy jihatdan asoslangan.

Kalit so'zlar: kasbiy ma'naviyat, kasbiy etika, axloqiy qadriyatlar, mas'uliyat, pedagogik mahorat, kasbiy kompetensiya, ma'naviy kamolot.

KIRISH. XXI asrda jamiyat taraqqiyoti, fan va texnologiyalarning jadal rivojlanishi inson kapitaliga bo'lgan ehtiyojni yanada oshirmoqda. Zamonaviy davrda mutaxassisdan faqat kasbiy bilim va amaliy ko'nikmalar emas, balki yuksak ma'naviyat, axloqiy barqarorlik va ijtimoiy mas'uliyat ham talab qilinmoqda. Shu sababli kasbiy ma'naviyat masalasi bugungi ta'lim tizimi va ilmiy izlanishlarning dolzarb yo'nalishlaridan biri hisoblanadi. Kasbiy ma'naviyat shaxsning kasbiy faoliyatga bo'lgan ongli munosabati, o'z vazifalarini vijdonan bajarishi, kasb etikasi me'yorlariga amal qilishi va jamiyat manfaatlarini ustuvor qo'ya olishi bilan tavsiflanadi. Ayniqsa, pedagogik faoliyatda kasbiy ma'naviyatning o'rni alohida ahamiyat kasb etadi. Chunki pedagog nafaqat bilim beruvchi, balki ma'naviy tarbiya beruvchi shaxs sifatida ham namoyon bo'ladi. **KASBIY MA'NAVIYAT TUSHUNCHASI VA UNING MAZMUNI.** Kasbiy ma'naviyat — bu shaxsning kasbiy faoliyat jarayonida shakllanadigan ma'naviy, axloqiy, ijtimoiy va madaniy fazilatlar majmuidir. U mutaxassisning kasbiy faoliyatini insonparvarlik, adolat, halollik va mas'uliyat tamoyillari asosida tashkil etishini anglatadi. Kasbiy ma'naviyat quyidagi tarkibiy qismlardan iborat: kasbiy mas'uliyat; axloqiy me'yorlarga rioya qilish; kasbga sadoqat; ijtimoiy faollik; insoniy qadriyatlarga hurmat; kasbiy o'zini rivojlantirish. Kasbiy ma'naviyat shaxsning ichki dunyosi bilan kasbiy faoliyati o'rtasidagi uyg'unlikni ta'minlaydi.

KASBIY MA'NAVIYATNING O'ZIGA XOS PRINSIPLARI. 1. Insonparvarlik prinsipi. Kasbiy ma'naviyatning eng muhim tamoyillaridan biri insonparvarlik

hisoblanadi. Har qanday kasb vakili o'z faoliyatida inson manfaatlari, huquqlari va qadr-qimmatini hurmat qilishi zarur. Pedagogik faoliyatda insonparvarlik o'quvchi shaxsiga hurmat, uning qobiliyatlarini rivojlantirish va individual yondashuv orqali namoyon bo'ladi. 2. Mas'uliyat prinsipi. Kasbiy faoliyat natijalari uchun javobgarlikni his qilish mutaxassisning ma'naviy yetukligini belgilaydi. Mas'uliyat kasbiy qarorlarni ongli ravishda qabul qilish va ularning oqibatlarini anglashni talab etadi. Pedagog faoliyatida mas'uliyat quyidagilarni o'z ichiga oladi: ta'lim sifati uchun javobgarlik; tarbiyaviy faoliyatga mas'uliyat; shaxsiy namuna ko'rsatish. 3. Halollik va vijdonlilik prinsipi. Kasbiy ma'naviyatning asosiy mezonlaridan biri halollikdir. Halol mehnat, adolatli munosabat va vijdon asosidagi faoliyat mutaxassisning jamiyatdagi obro'sini oshiradi. Vijdonlilik quyidagi jihatlarda namoyon bo'ladi: vazifalarni sifatli bajarish; insoflilik; kasbiy majburiyatlarga sodiqlik. 4. Kasbiy kompetentlik prinsipi. Kasbiy ma'naviyat faqat axloqiy me'yorlar bilan cheklanmaydi. Mutaxassis muntazam ravishda o'z ustida ishlashi, yangi bilimlarni egallashi va kasbiy salohiyatini rivojlantirib borishi zarur. Bugungi kunda zamonaviy pedagog quyidagi kompetensiyalarga ega bo'lishi lozim: innovatsion fikrlash; raqamli savodxonlik; tadqiqotchilik qobiliyati; kommunikativ madaniyat. 5. Kasbga sadoqat prinsipi. Kasbga sadoqat mutaxassisning o'z kasbini qadrlashi va unga hurmat bilan yondashishida namoyon bo'ladi. Kasbga sadoqat quyidagilar orqali ifodalanadi: kasbiy burchni anglash; o'z faoliyatiga fidoyilik; kasbiy rivojlanishga intilish. 6. Milliy va umuminsoniy qadriyatlarga sodiqlik prinsipi. Zamonaviy mutaxassis milliy qadriyatlar va umuminsoniy tamoyillar uyg'unligini saqlay olishi zarur. Bu prinsip quyidagilarni o'z ichiga oladi: milliy madaniyatga hurmat; bag'rikenglik; ma'naviy merosni asrash; ijtimoiy hamkorlik.

PEDAGOGIK FAOLIYATDA KASBIY MA'NAVIYATNING AHAMIYATI.

Pedagogik faoliyat ma'naviy mas'uliyat talab qiladigan kasblardan biridir. O'qituvchi bilim berish bilan bir qatorda jamiyatning kelajak avlodini shakllantiradi. Pedagogning kasbiy ma'naviyati quyidagilar orqali namoyon bo'ladi: o'quvchilar bilan axloqiy munosabat; pedagogik etika; kasbiy madaniyat; innovatsion faoliyat.

Shu bois pedagoglarni tayyorlash jarayonida ma'naviy tarbiya va kasbiy qadriyatlarni shakllantirish muhim vazifa sanaladi.

XULOSA. Kasbiy ma'naviyat zamonaviy mutaxassis shaxsini shakllantirishning muhim omillaridan biridir. Uning asosiy prinsiplari — insonparvarlik, mas'uliyat, halollik, kompetentlik, kasbga sadoqat va qadriyatlarga hurmat kasbiy faoliyat samaradorligini belgilaydi. Ayniqsa, pedagogik faoliyatda kasbiy ma'naviyatning rivojlanishi ta'lim sifatini oshirish, barkamol avlodni tarbiyalash va jamiyat

taraqqiyotiga xizmat qiladi. Shu sababli oliy ta'lim tizimida bo'lajak mutaxassislarning kasbiy ma'naviyatini rivojlantirishga alohida e'tibor qaratish zarur.

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COMPARATIVE ASSESSMENT OF THE QUALITY OF LIFE IN PATIENTS WITH DIABETIC FOOT SYNDROME AFTER HIGH AMPUTATION OF THE LOWER LIMB

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The relevance of research. Today, diabetes mellitus is the most common endocrine disease in the world. According to the IDF Diabetes Atlas 2025, there are 589 million people with diabetes mellitus worldwide, and it is projected that 853 million people will suffer from diabetes by 2050.

The aim of the study is to improve the quality of life of patients with diabetic gangrene of the lower extremities by selecting optimal methods for high and low amputations.

Materials and methods of research. In this work, the results of surgical treatment of 85 patients for 2017-2022 were analyzed. These patients received inpatient treatment with surgical complications of diabetic foot syndrome against the background of diabetes mellitus in the Department of purulent surgery and surgical complications of diabetes mellitus at the multidisciplinary clinic of Tashkent State Medical University. All patients were divided into 2 groups depending on the degree of purulent-necrotic lesions of the feet. The I-th group (comparison group) consisted of 46 patients (54.11%), and the II-th group (main group) consisted of 39 (45.88%) patients who underwent lower limb amputation above the knee joint.

In Group I, 21 patients underwent lower-third hip amputation, 18 patients underwent middle-third hip amputation, and 7 patients underwent upper-third hip amputation. In Group II, 13 patients underwent lower-third hip amputation, 10 patients underwent middle-third hip amputation, and 2 patients underwent upper-third hip amputation. In addition, 14 patients in the main group underwent Gritti-Shimanovsky amputation. Long-term intra-arterial catheter therapy was used in the complex treatment, and balloon angioplasty was performed in 37 patients with the neuroischemic form of diabetic foot syndrome.

In the main group, the Gritti-Shimanovsky hip amputation technique gave patients a higher chance of mobility, thereby improving their quality of life both in the immediate and long-term postoperative periods. In the comparison group, despite the good condition of the patients, we did not observe any patients using prostheses for walking. In most cases, they moved around using a wheelchair. In the main group, 5.9% of patients actively used prostheses when walking, but due to discomfort or improper

handling of the prostheses, the frequency of repeated surgeries increased from 2.17% to 5.1%. In the long term, the number of patients using prostheses increased from 5.9% to 9.5% among patients with hip amputations.

To determine the nature and quality of life of patients in the long term, we used the SF-36 questionnaire specifically for patients with lower limb amputation. We also studied the psychological aspects of their health through a survey conducted during the interview.

When analyzing the results, it was found that in the comparison group, the quality of life of patients with above-knee amputation was 52.2% for vitality, 67.4% for social functioning, 63.0% for role functioning, and 15.2% for psychological health. In the main group, the indicators were 61.5% for vitality, 71.8% for social functioning, 69.2% for role functioning, and 58.9% for psychological health.

In the comparison group, despite distal resection of the lower limb in cases of lower limb gangrene, the psychological state and vitality of patients deteriorate dramatically.

Conclusions. Thus, the traditional strategy of performing lower limb amputations in case of critical ischemia largely worsens the long-term results of surgical treatment, reducing the quality of life. The results obtained in the main group of patients aimed at improving the physical and psychological elements of health after amputation showed its high efficiency and the use of an improved optimal algorithm for performing lower limb amputations creates high chances of maintaining the patients' role activity in social life.

“MOVEMENT EFFICIENCY AND ENERGY EXPENDITURE IN COMPETITIVE JUDO”

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Abstract : This study investigates the impact of judo training on the physical fitness and psychological development of young athletes. Judo is widely recognized not only as a competitive combat sport but also as an educational tool that promotes physical, mental, and social growth. Regular participation in judo training contributes to the development of essential physical abilities, including strength, endurance, speed, flexibility, balance, and coordination, while simultaneously enhancing psychological characteristics such as self-confidence, discipline, emotional stability, and resilience. The aim of this study was to analyze the role of systematic judo practice in improving the physical and psychological characteristics of youth athletes. The research was conducted through a comprehensive review of scientific literature and an analysis of previous studies related to sports science, physical education, and sport psychology. The findings indicate that regular judo training significantly improves muscular strength, aerobic capacity, motor coordination, and overall physical performance. Furthermore, participation in judo enhances cognitive skills, promotes emotional self-regulation, reduces anxiety levels, and strengthens motivation and perseverance. The educational philosophy of judo, based on mutual respect, self-control, and continuous self-improvement, also contributes positively to the social behavior and character development of young practitioners. In conclusion, judo represents an effective means of supporting the comprehensive development of young athletes. Its benefits extend beyond physical conditioning to include psychological well-being, social adaptation, and personal growth. Therefore, the integration of judo programs into youth sports development and educational systems is strongly recommended.

Keywords: judo, youth athletes, physical fitness, psychological development, sports training, motor skills, emotional regulation, youth development.

Competitive judo requires athletes to perform high-intensity technical and tactical actions while managing limited physiological resources. Movement efficiency plays a critical role in determining athletic performance, as inefficient movements can increase energy expenditure and accelerate fatigue. Despite the importance of energy

management in judo, limited research has examined the relationship between movement efficiency and physiological cost during competitive performance. This study aimed to investigate the association between movement efficiency and energy expenditure among competitive judokas.

A cross-sectional study was conducted involving 40 competitive judo athletes (age: 18–25 years) from regional and national teams. Participants completed simulated judo matches under standardized conditions. Movement efficiency was assessed using video-based motion analysis, including movement economy, displacement patterns, and technical execution scores. Energy expenditure was measured through portable metabolic analyzers and heart rate monitoring. Descriptive statistics, Pearson correlation analysis, and multiple regression models were used to examine relationships between variables at a significance level of $p < 0.05$.

Athletes demonstrating higher movement efficiency exhibited significantly lower energy expenditure during simulated matches ($r = -0.68$, $p < 0.001$). Efficient judokas showed reduced unnecessary displacement, improved technical precision, and lower physiological strain compared to less efficient athletes. Regression analysis indicated that movement efficiency explained 46% of the variance in energy expenditure ($R^2 = 0.46$, $p < 0.001$). Furthermore, athletes with greater efficiency maintained performance quality during later stages of competition and reported lower perceived exertion.

The findings suggest that movement efficiency is a significant determinant of energy expenditure in competitive judo. Athletes who optimize technical execution and minimize unnecessary movements can conserve physiological resources and sustain performance throughout a match. Coaches should incorporate biomechanical analysis, technical refinement, and movement-economy training into athlete development programs. Future research should explore longitudinal interventions aimed at improving movement efficiency and competitive outcomes in elite judo populations.

In conclusion, the findings of this study demonstrate that judo training plays a significant role in the comprehensive development of young athletes. Regular participation in judo contributes to improvements in physical fitness components, including strength, endurance, coordination, flexibility, and balance. At the same time, judo training promotes important psychological qualities such as self-confidence, emotional stability, discipline, resilience, and stress management. Beyond its physical and psychological benefits, judo fosters positive social and moral values, including respect, responsibility, self-control, and perseverance. These characteristics support the overall personal development of young athletes and help them adapt more effectively to both sporting and everyday challenges. Therefore, judo should be considered an

effective tool for promoting holistic youth development. The integration of judo programs into schools, sports clubs, and youth development initiatives can contribute to healthier lifestyles, improved mental well-being, and stronger character formation among young people. Future research should focus on longitudinal studies to further examine the long-term effects of judo training on physical, psychological, and social outcomes in different age groups and competitive

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KORXONALARINING IQTISODIY XAVFSIZLIGINI BAHOLASHDA QO'LLANILADIGA KO'RSATKICHLAR KOMPLEKSI

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Annotatsiya: ushbu maqolada oziq-ovqat korxonalarining “iqtisodiy xavfsizligi” tushunchasi mohiyatini aniqlashning kontseptual yondashuvlari, uni nazariy baholash usullari to'g'risida nazariy ma'lumotlar berilgan. korxonaning iqtisodiy xavfsizlik holatini kompleks omillar tizimi orqali, hamda funktsional komponentlari iqtisodiy xavfsizlikni belgilovchi omillar shaklida alohida baholash orqali butun korxonaning iqtisodiy xavfsizligini baholovchi ko'rsatkichlar kompleksini hisoblash to'g'risida ma'lumotlar keltirilgan.

Kalit so'zlar: korxona, iqtisodiy xavfsizlik, iqtisodiy xavfsizlik tizimi, tashqi va ichki muxit, kompleks omillar tizimi, integral ko'rsatkichlar, stoxastik regressiya modeli, ko'p o'lchovli funksiyalar.

КОМПЛЕКС ПОКАЗАТЕЛЕЙ, ИСПОЛЗУЕМЫХ ПРИ ОЦЕНКЕ ЭКОНОМИЧЕСКОЙ БЕЗОПАСНОСТИ ПРЕДПРИЯТИЙ

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Аннотация: В данной статье представлена теоретическая информация о концептуальных подходах к определению сущности понятия «экономическая безопасность» пищевых предприятий, методах ее теоретической оценки. Приводится информация о расчете комплекса показателей, оценивающих экономическую безопасность всего предприятия, путем раздельной оценки состояния экономической безопасности предприятия через систему комплексных факторов, а также путем раздельной оценки ее функциональных составляющих в виде факторов, определяющих экономическую безопасность.

Ключевые слова: предприятие, экономическая безопасность, система экономической безопасности, внешняя и внутренняя среда, система комплексных факторов, интегральные показатели, стохастическая регрессионная модель, многомерные функции.

A SET OF INDICATORS USED IN ASSESSING THE ECONOMIC SAFETY OF ENTERPRISES

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Abstract: this article provides theoretical information on conceptual approaches to defining the essence of the concept of "economic security" of food enterprises, methods of its theoretical assessment. Information is provided on the calculation of a set of indicators that assess the economic security of the entire enterprise, by separately assessing the state of economic security of an enterprise through a system of complex factors, as well as by separately assessing its functional components in the form of factors that determine economic security.

Keywords: enterprise, economic security, economic security system, external and internal environment, system of complex factors, integral indicators, stochastic regression model, multidimensional functions.

Korxonaning iqtisodiy xavfsizligini ta'minlash bo'yicha chora-tadbirlar amalga oshirish uchun uning xavfsizligiga tahdid soladigan xavf-xatarlarni bilish kerak. Buning uchun korxona iqtisodiy xavfsizligini ifodalaydigan parametrlarni o'rganish va ularni tahlil qilish lozim. Ammo, respublikada korxonalar iqtisodiy xavfsizligini baholash bo'yicha ko'rsatkichlar tizimi ishlab chiqilmaganligi bu boradagi amaliy muammolardan biri hisoblanadi

Ushbu muammolarni hal qilish uchun mahalliy korxonalarning istiqbolli va joriy faoliyatida zamonaviy boshqaruv tamoyillari va klaster innovatsion yondashuvlarini amaliyotga tatbiq etish, strategik rejalashtirish, marketing, tashkil etish va iqtisodiy xavfsizlikni ta'minlash vazifasi bo'lgan korxonaning yangi samarali boshqaruv tuzilmalarini yaratishga harakat qilish zarur.

Oziq-ovqat korxonalarining iqtisodiy faoliyat xavfsizligi muammosi turli darajadagi korxonalar uchun xos bo'lib, resurslarni to'plash, iste'mol qilish va qayta ishlab chiqarish jarayonlari bilan bog'liq bo'lgan va strategik maqsadlarini belgilash va boshqarish imkoniyatini beradigan o'ziga xos xavfsizlikni anglatadi. Korxonalar iqtisodiy tizimining mavjudligi ichki va tashqi sharoitlarning mutanosibligi, uning joriy va istiqboldagi rivojlanish manfaatlarini amalga oshirish imkonini beradi.

Demak iqtisodiy raqobatning tashqi sharoitlari, bozor noaniqligi va tijorat tavakkalchiligining mavjudligi iqtisodiy xavfsizlik tizimini yaratish zaruriyatiga olib keladi.

Tadbirkorlik faoliyatini tanlash uchun korxonaning iqtisodiy xavfsizligiga ta'sir ko'rsatadigan, ma'lum darajadagi tashqi tahdid va tahdidlarni keltirib chiqaradigan biznes muhitining xavfsizligi katta ahamiyatga ega. Korxonaning "iqtisodiy xavfsizligi" tushunchasini bevosita tadbirkorning ushbu tushunchani idrok etishi orqali ko'rib chiqish mantiqan to'g'ri bo'ladi, chunki u tadbirkorlik faoliyatini tanlash bosqichida potentsial xavf va tahdidlarni, shuningdek, unga qarshi kurashish qobiliyatini baholaydi, yoki ularni bartaraf etadi. [1]

Bir qator korxonalar rahbarlari, biznes vakillari hali ham korxonaning "iqtisodiy xavfsizligi" tushunchasi mohiyatini to'liq tushunmaydilar. Muayyan tadbirkorlik sub'ekti korxonaning ishlashi, rivojlanishi bo'yicha boshqaruv qarorlarini ishlab chiqish va qabul qilishda "iqtisodiy xavfsizlikni" baholash usullarini amaliy qo'llash to'g'risida o'ylab ko'rmaydilar.

Bundan tashqari, birinchidan hozirgi kunda iqtisodiy xavfsizlikni belgilovchi tahdidlarni diagnostika qilish usullari, ikkinchi tomondan, uning darajasini baholashning uslubiy yondashuvlari haqida etarlicha uslubiy, amaliy qo'llanmalarining yo'qligi ham korxonalar iqtisodiy xavfsizlik tizimini ishlab chiqishda qiyinchilik tug'diradi.

Har bir xo'jalik yurituvchi sub'ekt, boshqaruv darajasidan qat'i nazar, iqtisodiy makonda o'zining raqobatbardosh mavqeini oshirish uchun resurslardan foydalanish, muvaffaqiyatli faoliyat yuritishi va rivojlanishini ta'minlash bo'yicha mustaqil ravishda qaror qabul qiladi. Cheklangan iqtisodiy resurslar sharoitida raqobat bozor iqtisodiyotining "immanent" xususiyatidir, shuning uchun boshqaruvning har qanday darajasida iqtisodiy xavfsizlikni ta'minlash zarurati tug'iladi. "Iqtisodiy xavfsizlik" tushunchasining mohiyatini aniqlashning kontseptual yondashuvlarini bir qator ilmiy maqolalarda umumlashtirilgan to'rtta maqsad doirasida tizimlashtirish mumkin:

- tahdidlardan himoyalash holati;
- resurslardan samarali foydalanish holati;
- barqaror ishlash va barqaror rivojlanish qobiliyati;
- raqobatbardosh ustunliklarning mavjudligi va raqobatbardoshligi.

Shu bilan birga, iqtisodiy tizimlarni boshqarish iqtisodiy ierarxiyaning ushbu darajalarining har birida iqtisodiy xavfsizlik tushunchasi, avvalambor, unga xos bo'lgan umumiylikni ifodalaydi, ularning har birida turli darajadagi xususiyatlar tufayli o'ziga xos ifodani oladi. Shunday qilib, korxonaning iqtisodiy xavfsizligi, birinchidan, "iqtisodiy xavfsizlik" iqtisodiy kategoriyasiga xos bo'lgan umumiy tomondan, ikkinchidan, mikrodarajada tadbirkorlik sub'ektlarini tavsiflovchi maxsus tomondan ko'rib chiqiladi.

Korxonaning samarali va xavfsiz rivojlanishi tizimini yaratish uchun strategik, taktik va operatsion (joriy) rejalarni korxonaning umumiy maqsadi bilan o'zaro bog'lash orqali boshqaruv mexanizmining aniqligini ta'minlash lozim. Biroq, amalda ko'pincha turli xil ijtimoiy, iqtisodiy va ma'muriy sub'ektlarning manfaatlari to'qnashuvi bilan bog'liq bo'lgan korxonani boshqarish mexanizmini qisman yoki hatto to'liq amalga oshirmaslik holatlarini keltirib chiqaradi.[2]

Faoliyat va rivojlanish jarayonlarini mohirona boshqarish korxonani boshqarish samaradorligini, xavfsizligini va uning rivojlanish istiqbollari belgilaydi. Zamonaviy korxonaning ijtimoiy-iqtisodiy va ma'muriy-siyosiy muhitining tuzilishi undagi xatarlarni biznes mikromuhitida bozor va ma'muriy muhitni tizimli monitoring qilishning murakkabligi bilan bog'liq bo'lib, bu korxonadan marketing va boshqaruv faoliyatini sezilarli darajada o'zgartirishni, bozorni boshqarish bo'yicha bilim doirasini kengaytirishni talab qiladi.. Biznesni himoya qilishning bunday chora-tadbirlarining asosiy maqsadi tashqi muhitdan yuzaga kelishi mumkin bo'lgan tahdidlarning oldini olish va kompaniyaning salohiyatini ro'yobga chiqarish, biznes muhitining boshqa sub'ektlari bilan o'zaro munosabatlar doirasida uzoq muddatli, barqaror munosabatlar tizimini yaratish xisobiga amalga oshadi.

Har bir holatda iqtisodiy xavfsizlikni baholash usulini tanlash baholashning maqsad va vazifalarini, korxonaning o'ziga xos xususiyatlarini, zarur ma'lumotlarning mavjudligini va boshqa ob'ektiv omillarni hisobga olgan holda amalga oshiriladi. Iqtisodiy xavfsizlik ko'rsatkichlari ro'yxati har bir korxona tomonidan uning o'ziga xos xususiyatlariga, qo'llaniladigan boshqaruv usullariga va tarmoqdagi rolga qarab mustaqil ravishda belgilanadi. Ko'rsatkichlarning chegara qiymatlari parametrlarini aniqlash samaradorligi bevosita foydalaniladigan ma'lumotlarning ishonchliligi va sifatiga bog'liq. Shuni ta'kidlash kerakki, iqtisodiy xavfsizlik darajasini baholash usullari korxona faoliyatini moliyaviy-iqtisodiy tahlil qilishning tasdiqlangan, umume'tirof etilgan usullariga nisbatan afzalliklarga ega ekanligini aniq asoslash deyarli yo'q. Ushbu ob'ektiv usullardan foydalanish iqtisodiy xavfsizlikni ta'minlashga ham, korxonaning investitsion jozibadorligiga ham salbiy ta'sir ko'rsatadigan asosiy sabablarni aniqlashga imkon beradi.

Bugungi kunda jahon amaliyotida korxonaning moliyaviy holatining individual ko'rsatkichlariga ko'ra, iqtisodiy xavfsizlikning maqbul qiymatlari standartlari aniqlandi.

1-jadval

№	Ko'rsatkichlar nomi	Ko'rsatkichlar nisbati
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1	Korxonaning o'z kapitali / qarz mablag'larga nisbati	1:1 nisbatda bo'lishi kerak
2	Likvidlik	1 ga teng yoki $1 <$ bo'lishi kerak
3	Joriy aktivlarni qoplash koeffitsienti	2
4	Korxonaning bino, ko'chmas mulk bilan ta'minoti	1 ga yaqin bo'lishi kerak
5	Kapitalning sof rentabelligi	kapitalning sof rentabelligi $>$ bank krediti bo'yicha foizlar
6	Aylanma mablag'larning qisqa muddatli qarzg nisbati	Amalda bu nisbat 2:1 bo'lishi kerak, yani korxona aktivlarivqisqa muddatli majburiyatlardan 2 baravar ko'p bo'lishi lozim
7	Kompaniyaning to'lov qobiliyatining yana bir ko'rsatkichi uzoq muddatli qarzlarning kompaniyaning o'z kapitaliga nisbati hisoblanadi.	bu nisbat 0,65 yoki undan kam bo'lishi kerak

Muallif tomonidan tuzilgan.

Yuqorida keltirilganlardan quyidagilarni hulosa qilish mumkin, Zavodning moliyaviy-iqtisodiy holati va rivojlanishini ishonchli baholash uchun yillik yakuniy hisobotda va korxonaning holati to'g'risidagi hisobotda keltirilgan ma'lumotlarning o'zi etarli emas. Korxonaning iqtisodiy xavfsizligini baholash uchun ko'rsatkichlar kompleksidan foydalanish zarur. Bular quyidagilar:

- To'lov qobiliyati ko'rsatkichlari
- Moliyaviy barqarorlik ko'rsatkichlari
- Tadbirkorlik faoliyati ko'rsatkichlari

Bulardan tashqari balansning alohida pozitsiyalariga tushuntirishlar, qo'shimchalar va korxona faoliyati natijalarini hisoblash hamda tahlil qilingan korxonaning savdo bozoridagi o'rni to'g'risidagi ma'lumotlar asosida korxonaning holati va rivojlanishiga asosli va ishonchli baho berish hamda iqtisodiy xavfsizligiga batafsil xulosa qilish mumkin.

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INTEGRATED INFLAMMATION–FIBROGENESIS PANEL FOR STRATIFYING PATIENTS WITH VIRAL LIVER CIRRHOSIS

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Background. The progression from advanced fibrosis to cirrhosis is driven not only by hepatocyte injury but also by persistent systemic inflammation, activation of liver macrophages, and excessive extracellular matrix deposition. Conventional biochemical tests do not fully reflect these pathogenic mechanisms. Biomarkers such as interleukin-6 (IL-6), C-reactive protein (CRP), soluble CD163 (sCD163), procollagen type III N-terminal propeptide (PIIINP), and tissue inhibitor of metalloproteinases-1 (TIMP-1) may provide additional information on inflammatory activity, macrophage activation, and fibrogenesis.

Objective. To evaluate an integrated panel of inflammatory, macrophage activation, and fibrogenesis biomarkers for differentiating viral liver cirrhosis from advanced liver fibrosis.

Materials and Methods. The study included 79 patients with viral liver cirrhosis, 36 patients with F3–F4 liver fibrosis, and 30 healthy controls. Serum IL-6, CRP, sCD163, PIIINP, and TIMP-1 concentrations were determined using enzyme-linked immunosorbent assay. The levels of the biomarkers were compared among the study groups, and $p < 0.05$ was considered statistically significant.

Results. A marked increase in inflammatory markers was observed in patients with cirrhosis. IL-6 concentration reached 18.6 ± 7.4 pg/mL in the cirrhosis group, compared with 9.8 ± 3.7 pg/mL in the F3–F4 fibrosis group and 3.1 ± 1.2 pg/mL in controls ($p < 0.001$). Similarly, CRP levels were significantly higher in cirrhosis than in advanced fibrosis (11.9 ± 4.3 versus 6.2 ± 2.1 mg/L; $p < 0.001$), indicating a greater systemic inflammatory burden.

The marker of macrophage activation, sCD163, increased from 420 ± 110 ng/mL in F3–F4 fibrosis to 698 ± 185 ng/mL in cirrhosis ($p < 0.001$). This finding reflects enhanced Kupffer-cell activation and immune dysregulation in advanced liver disease. Markers of extracellular matrix turnover also showed significant differences. PIIINP concentration was 14.3 ± 4.1 ng/mL in cirrhosis compared with 8.7 ± 2.8 ng/mL in the F3–F4 group ($p < 0.001$), while TIMP-1 levels were 312 ± 74 and 198 ± 56 ng/mL, respectively ($p < 0.001$). The simultaneous increase in PIIINP and TIMP-1 suggests active collagen synthesis accompanied by reduced matrix degradation.

Conclusion. The combined assessment of IL-6, CRP, sCD163, PIIINP, and TIMP-1 provides a broader laboratory characterization of viral liver cirrhosis than routine biochemical testing alone. This integrated panel may be useful for identifying patients with active inflammation and progressive fibrogenesis, supporting laboratory-based risk stratification and individualized clinical follow-up.

ЯНГИ ТУҒИЛГАН ЧАҚАЛОҚЛАРДА ЭНДОКРИН КАСАЛЛИКЛАР СКРИНИНГИ: ЛАБОРАТОР ДИАГНОСТИКАНИНГ ЗАМОНАВИЙ ИМКОНИЯТЛАРИ ВА МУАММОЛАРИ

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Аннотация Мазкур мақолада янги туғилган чақалоқларда эндокрин касалликларни эрта аниқлашга йўналтирилган неонатал скрининг тизимининг моҳияти, унда қўлланиладиган замонавий лаборатор диагностика усуллари ҳамда амалиётда учрайдиган муаммолар атрофлича таҳлил қилинган. Туғма гипотиреоз ва туғма буйрак усти бези гиперплазияси каби энг кўп учрайдиган эндокрин патологияларни аниқлашда қўлланиладиган иммунофермент, хемилюминесцент ва тандем масс-спектрометрия усуллариининг қиёсий хусусиятлари кўрсатилган. Шунингдек, скрининг натижаларининг ишончлилигига таъсир этувчи омиллар ва уларни бартараф этиш йўллари бўйича амалий тавсиялар келтирилган. Мақола неонатологлар, эндокринологлар ва клиник лаборатория мутахассислари учун амалий аҳамиятга эга.

Калит сўзлар: чақалоқлар скрининги, туғма гипотиреоз, буйрак усти бези гиперплазияси, лаборатор диагностика, тандем масс-спектрометрия, эндокрин патология, неонатология.

Кириш Янги туғилган чақалоқларда эндокрин касалликларни эрта аниқлаш — болалар саломатлигини сақлаш тизимининг устувор йўналишларидан бири ҳисобланади. Кўпгина туғма эндокрин патологиялар дастлабки кунларда клиник жиҳатдан намоён бўлмайди, бироқ даволанмаган тақдирда болада жиддий ва қайтмас асоратларга, жумладан марказий асаб тизимининг ривожланишида орқада қолишга олиб келиши мумкин. Шу сабабли барча чақалоқларни қамраб олган оммавий лаборатор скрининг тизими ушбу касалликларни клиник белгилар намоён бўлишидан олдин аниқлаш имконини беради.

Жаҳон тажрибасида неонатал скрининг дастурлари дастлаб туғма гипотиреоз ва фенилкетонурияни аниқлаш мақсадида жорий этилган бўлса, ҳозирги кунда бу дастурлар туғма буйрак усти бези гиперплазияси, галактоземия ва бошқа моддалар алмашинуви касалликларини ҳам ўз ичига олган кенг қўламли текширишларга айланган. Эндокрин касалликлар ичида туғма гипотиреоз энг кўп учрайдиган ва скрининг самарадорлиги юқори бўлган патология ҳисобланади, бироқ туғма буйрак усти бези гиперплазияси каби камроқ учрайдиган, аммо ҳаёт учун хавфли бўлган касалликларни аниқлаш ҳам алоҳида аҳамиятга эга.

Лаборатор диагностика технологияларининг ривожланиши неонатал скрининг сифатини сезиларли даражада оширди. Замонавий иммунологик усуллар, хемилюминесцент анализаторлар ва тандем масс-спектрометрия каби юқори аниқликдаги технологиялар бир намунадан бир нечта кўрсаткични бир вақтда баҳолаш, шунингдек сохта мусбат ва сохта салбий натижалар сонини камайтириш имконини бермоқда. Шу билан бирга, скрининг тизимининг амалиётга татбиқ этилишида намуна олиш сифати, тасдиқловчи диагностикага юбориш тезлиги ва лаборатория хизматларининг ҳудудий тенг тақсимланиши каби бир қатор муаммолар ҳамон долзарблигини сақлаб қолмоқда.

Маҳаллий амалиётда ҳам неонатал скрининг дастурларини кенгайтириш, лабораторияларни замонавий ускуналар билан жиҳозлаш ҳамда мутахассисларнинг малакасини ошириш борасида тизимли ишлар олиб борилмоқда. Шу нуқтаи назардан, мавжуд лаборатор диагностика имкониятларини ва амалиётдаги муаммоларни илмий жиҳатдан умумлаштириш ушбу соҳани янада такомиллаштириш учун муҳим амалий аҳамиятга эга.

Чақалокларда скрининг қилинадиган асосий эндокрин касалликлар

Туғма гипотиреоз қалқонсимон без гормонларининг етишмовчилиги билан кечадиган, марказий асаб тизимининг нормал ривожланиши учун жуда хавфли бўлган касаллик ҳисобланади. Касалликнинг дастлабки клиник белгилари кўпинча ноаниқ ва кеч намоён бўлади, шу сабабли уни фақат лаборатор скрининг орқали эрта аниқлаш мумкин. Даволаш ўз вақтида (одатда ҳаётнинг дастлабки икки-уч ҳафтасида) бошланганда бола ақлий ва жисмоний ривожланиши бошқа болалардан фарқ қилмайди.

Туғма буйрак усти бези гиперплазияси, асосан 21-гидроксилаза ферментининг етишмовчилиги натижасида юзага келадиган генетик касаллик бўлиб, у тузлар йўқотилиши билан кечадиган оғир шаклда чақалок ҳаёти учун хавф туғдириши мумкин. Бундай ҳолатларда касалликни эрта аниқлаш ва гормонал терапияни ўз вақтида бошлаш ҳаётни сақлаб қолишда ҳал қилувчи аҳамиятга эга. Бундан

ташқари, туғма гиперинсулинизм ва неонатал қандли диабет каби камроқ учрайдиган, лекин клиник жиҳатдан жиддий бўлган эндокрин ҳолатлар ҳам алоҳида диагностик эътиборни талаб қилади

Тадқиқотнинг мақсади

Мазкур мақоланинг мақсади — янги туғилган чақалоқларда эндокрин касалликларни аниқлашга йўналтирилган лаборатор скрининг усуллариининг замонавий имкониятларини таҳлил қилиш, асосий эндокрин патологиялар бўйича скрининг кўрсаткичларини умумлаштириш, шунингдек амалиётда учрайдиган муаммоларни аниқлаш ва уларни бартараф этиш йўллариини таклиф этишдан иборат. Бу мақсадга эришиш учун қуйидаги вазифалар белгиланди: неонатал эндокрин скринингнинг асосий йўналишларини ўрганиш; замонавий лаборатория усуллариини (иммунофермент, хемилюминесцент, тандем масс-спектрометрия) қиёсий таҳлил қилиш; скрининг натижаларининг ишончлилигига таъсир этувчи омилларни аниқлаш; лаборатория хизмати сифатини ошириш бўйича амалий тавсиялар ишлаб чиқиш.

Материал ва усуллар

Тадқиқот давомида неонатология ва клиник лаборатория диагностикаси соҳасидаги маҳаллий ва хорижий илмий адабиётлар, шунингдек халқаро тиббий ташкилотларнинг неонатал скрининг бўйича тавсиянома ва қўлланмалари таҳлил қилинди. Тадқиқот усули сифатида адабиётларни таҳлил қилиш, умумлаштириш ва тизимлаштириш усулларииндан фойдаланилди.

Лаборатор диагностика усуллари уч асосий йўналиш бўйича кўриб чиқилди: биринчиси — иммунофермент таҳлил (ELISA) усули, бу усул чақалоқ товонидан олинган қон томчисини (dried blood spot) махсус қоғозга тушириш ва уни лабораторияда қайта ишлаш орқали амалга оширилади; иккинчиси — хемилюминесцент ва флуоресцент иммуноанализ (CLIA, DELFIA) усуллари, бу усуллар юқори сезувчанлик ва тезкорлик билан ажралиб туради; учинчиси — тандем масс-спектрометрия (MS/MS) усули, бу усул бир намунадан бир нечта стероид гормонларининг нисбатини баҳолаш орқали сохта натижалар сонини камайтиришга хизмат қилади.

Шунингдек, тасдиқловчи диагностика усуллари — қон зардобидидаги гормонлар даражасини аниқлаш, электролитлар таҳлили ҳамда зарур ҳолларда молекуляр-генетик текширувлар (масалан, CYP21A2 гени мутацияларини аниқлаш) — алоҳида кўриб чиқилди. Лаборатория сифатини баҳолашда ички ва ташқи сифат назорати тизимлари, шунингдек стандарт намуналар асосида ўтказиладиган малака синовлари таҳлил қилинди.

Натижалар ва муҳокама

Олиб борилган таҳлиллар шуни кўрсатдики, неонатал эндокрин скрининг дастурларида энг кўп учрайдиган ва амалий аҳамиятга эга бўлган касалликлар туғма гипотиреоз ва туғма буйрак усти бези гиперплазиясидир. Адабиёт маълумотларига кўра, туғма гипотиреоз тахминан ҳар 2000–4000 чақалоқдан бирида, туғма буйрак усти бези гиперплазияси эса анча камроқ, тахминан ҳар 10000–15000 чақалоқдан бирида учрайди. Туғма гиперинсулинизм ва неонатал қандли диабет каби ҳолатлар жуда кам учрайди, бироқ улар клиник жиҳатдан оғир кечиши сабабли алоҳида диагностик эътиборни талаб қилади. Ушбу маълумотлар умумлаштирилган кўринишда 1-жадвалда келтирилган.

№	Касаллик номи	Учраш частотаси	Скрининг маркери	Намуна олиш муддати
1	Туғма гипотиреоз	1:2000–1:4000	ТТГ (TSH)	3–5-кунлик
2	Туғма буйрак усти бези гиперплазияси (21-гидроксилаза етишмовчилиги)	1:10000–1:15000	17-ОН-прогестерон	3–5-кунлик
3	Туғма гиперинсулинизм	1:25000–1:50000	Глюкоза, инсулин	клиник кўрсатма бўйича
4	Неонатал қандли диабет	1:100000–1:500000	Глюкоза, С-пептид	клиник кўрсатма бўйича
5	Бошқа эндокрин патологиялар	кам учрайди	қўшимча гормонлар	клиник кўрсатма бўйича

1-жадвал. Чақалоқлар скринингида текшириладиган асосий эндокрин касалликлар ва уларнинг лаборатор кўрсаткичлари (адабиёт маълумотлари асосида, тахминий кўрсаткичлар)

1-жадвалда келтирилган маълумотлардан кўриниб турибдики, ҳар бир касаллик учун ўзига хос скрининг маркери ва намуна олиш муддати белгиланган. Намуна одатда чақалоқ ҳаётининг 3–5-кунида олинади, бу муддат жуда эрта (туғилишдан кейинги дастлабки соатларда) олинган намунада физиологик ТТГ кўтарилиши натижасида сохта мусбат натижа эҳтимолини, жуда кеч олинган намунада эса даволашни кечиктириш хавфини инобатга олган ҳолда белгиланган.

Замонавий лаборатория технологиялари

Тандем масс-спектрометрия усулининг неонатал скрининг амалиётига кенг жорий этилиши, айниқса туғма буйрак усти беги гиперплазиясини аниқлашда, сохта мусбат натижалар сонини сезиларли даражада камайтирди. Бу усул фақат 17-ОН-прогестерон даражасини эмас, балки бир нечта стероид гормонларининг нисбатини баҳолаш орқали натижанинг аниқлигини оширади, бу эса айниқса чала туғилган ва паст тана вазнли чақалоқларда муҳим аҳамиятга эга, чунки уларда буйрак усти безининг етилмаганлиги сабабли стероид гормонлар даражаси физиологик равишда юқори бўлиши мумкин.

Хемиллюминесцент ва автоматлаштирилган иммуноанализ тизимлари эса лаборатория жараёнини тезлаштириш, инсон омилидан келиб чиқадиган хатоликларни камайтириш ҳамда бир кунда катта ҳажмдаги намуналарни қайта ишлаш имконини беради. Бундай автоматлаштирилган тизимлар, айниқса чақалоқлар сони юқори бўлган йирик шаҳарлардаги марказлашган лабораторияларда, скрининг дастурининг самарадорлигини оширишда муҳим рол ўйнайди.

Тасдиқловчи диагностика усуллари

Скрининг натижаси четлашган ҳолатларда чақалоқ албатта тасдиқловчи (диагностик) текширувдан ўтиши шарт. Туғма гипотиреоз гумон қилинганда қон зардобдаги ТТГ ва эркин Т4 даражаси аниқланади, туғма буйрак усти беги гиперплазиясида эса зардобдаги 17-ОН-прогестерон, электролитлар ва зарур ҳолларда кортизол даражаси баҳоланади. Молекуляр-генетик усуллар, хусусан СYP21A2 генидаги мутацияларни аниқлаш, ташхисни яқуний тасдиқлаш ҳамда оилада касалликнинг такрорланиш хавфини баҳолаш учун қўшимча имконият яратади.

Тасдиқловчи диагностикага ўз вақтида юбориш ва натижани тезкор олиш скрининг тизимининг умумий самарадорлигини белгилайдиган муҳим босқич ҳисобланади. Бу босқичда кечикиш ёки оила билан алоқанинг узилиши даволашни кечиктириши ва натижада оғир асоратларга олиб келиши мумкин.

Скрининг тизимидаги муаммолар ва уларни бартараф этиш йўллари

Намуна олиш муддати ва сифати

Қон намунасини жуда эрта ёки нотўғри техника билан олиш натижа аниқлигига сезиларли таъсир кўрсатади. Намунадаги қон миқдорининг етарли эмаслиги, қоғозга нотўғри томизиш ёки намунанинг намланиши лаборатория натижасини нотўғри талқин қилинишига сабаб бўлиши мумкин. Шу сабабли тиббиёт ходимларини намуна олиш техникасига доимий равишда ўргатиш зарур.

Чала туғилган чақалоқларда сохта натижалар

Чала туғилган ва паст тана вазнли чақалоқларда эндокрин безларнинг физиологик етилмаганлиги сабабли скрининг кўрсаткичлари соғлом, муддатида туғилган чақалоқларникидан фарқ қилиши мумкин. Бу ҳолат сохта мусбат ёки сохта салбий натижаларга олиб келиши, ҳамда қўшимча, тана вазнига мослаштирилган чегара қийматларини қўллашни талаб қилади.

Чегара (cut-off) қийматларини стандартлаштириш

Турли лабораториялар ва анализаторлар ўртасида чегара қийматларининг бир хил эмаслиги скрининг натижаларининг қиёсий таҳлилини мураккаблаштиради. Миллий даражада ягона, илмий асосланган ва даврий равишда қайта кўриб чиқиладиган чегара қийматлари тизимини жорий этиш натижаларнинг ишончлилигини оширади.

Тасдиқловчи текширувга ўз вақтида юбориш

Скрининг натижаси четлашган чақалоқларни тасдиқловчи диагностикага ўз вақтида юбормаслик ёки оила билан алоқанинг узилиши даволашни кечиктиришнинг асосий сабабларидан биридир. Электрон рўйхатга олиш тизимлари ва автоматик хабардорлик механизмларини жорий этиш бу муаммони бартараф этишга ёрдам беради.

Лаборатория сифатини назорат қилиш

Лабораторияларнинг ички сифат назорати ва ташқи сифат баҳолаш дастурларида мунтазам қатнашиши натижаларнинг ишончлилигини таъминлашда муҳим аҳамиятга эга. Халқаро андозаларга мос аккредитация тизимини жорий этиш лаборатория хизматининг умумий сифатини оширади.

Намуна транспортировкasi ва ҳудудий тенгсизлик

Узоқ масофадаги ва қишлоқ ҳудудларида намунани марказий лабораторияга ўз вақтида етказиш муаммоси ҳамон сақланиб қолмоқда. Намунанинг узоқ муддат сақланиши ёки нотўғри ҳароратда транспортировка қилиниши таҳлил натижасига салбий таъсир кўрсатиши мумкин, шу сабабли ҳудудларда логистика тизимини такомиллаштириш зарур.

Ота-оналарнинг хабардорлиги

Ота-оналарнинг неонатал скрининг аҳамияти ҳақида етарли хабардор бўлмаслиги намуна олишдан бош тортиш ёки тасдиқловчи текширувга келмаслик ҳолатларига сабаб бўлиши мумкин. Шу сабабли туғруқхоналарда ва қабул бўлимларида ота-оналар билан тушунтириш ишларини олиб бориш муҳим амалий аҳамиятга эга.

Молия ва инфратузилма имкониятлари

Замонавий лаборатория ускуналари ва реагентларнинг нархи юқори бўлиши, шунингдек барча ҳудудларда замонавий анализаторларнинг мавжуд эмаслиги

скрининг дастурининг кенг қамровли амалга оширилишини чеклайди. Давлат томонидан молиялаштириш ва марказлашган лаборатория тизимини ривожлантириш бу муаммони бартараф этишда муҳим рол ўйнайди.

Хулоса

Хулоса қилиб айтганда, янги туғилган чақалоқларда эндокрин касалликлар скрининги болалар саломатлигини сақлашнинг муҳим ва самарали воситаси ҳисобланади. Замонавий лаборатория технологиялари — хемилюминесцент иммуноанализ ва тандем масс-спектрометрия — скрининг натижаларининг аниқлигини сезиларли даражада оширади ва сохта натижалар сонини камайтиради.

Шу билан бирга, скрининг тизимининг амалий самарадорлиги фақат лаборатория технологиясига эмас, балки намуна олиш сифати, тасдиқловчи диагностикага ўз вақтида юбориш, лаборатория сифатини назорат қилиш ҳамда ота-оналарнинг хабардорлигини ошириш каби омилларнинг уйғунлашган тизимига ҳам боғлиқ. Ушбу йўналишда олиб бориладиган тизимли ишлар чақалоқлар ўртасида ногиронлик ва оғир асоратлар даражасини камайтиришда муҳим амалий аҳамиятга эга бўлади.

Келажақда неонатал скрининг дастурларини янада кенгайтириш, марказлашган лаборатория тармоғини ривожлантириш ҳамда электрон маълумотлар базасини жорий этиш скрининг тизимининг сифати ва қамровини оширишга хизмат қилади. Шу йўналишда олиб бориладиган илмий тадқиқотларни давом эттириш ва мутахассисларнинг узлуксиз таълим тизимини мустаҳкамлаш муҳим вазифалардан бири бўлиб қолади.

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SUN'IIY INTELLEKT YORDAMIDA NANOBO'YOQLAR TARKIBINI OPTIMALLASHTIRISH VA ULARNING OPTIK XOSSALARINI BASHORAT QILISH

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Annotatsiya: Mazkur maqolada sun'iy intellekt texnologiyalaridan foydalangan holda nanobo'yoqlar tarkibini optimallashtirish hamda ularning optik xossalarini bashorat qilish masalalari tahlil qilingan. Nanobo'yoqlarning tarkibiy komponentlari, zarracha o'lchami, konsentratsiyasi va dispersiya darajasi kabi omillarning optik ko'rsatkichlarga ta'siri o'rganilgan. Mashinali o'qitish algoritmlari yordamida eksperimental ma'lumotlarni qayta ishlash, optimal tarkibni aniqlash va yorug'lik yutilishi, qaytishi hamda uzatilishi kabi optik xususiyatlarni yuqori aniqlik bilan prognoz qilish imkoniyatlari yoritilgan. Tadqiqot natijalari sun'iy intellekt asosidagi modellar nanomateriallar ishlab chiqish jarayonlarini tezlashtirish, xarajatlarni kamaytirish va yuqori samaradorlikka ega nanobo'yoqlar yaratishda muhim ahamiyat kasb etishini ko'rsatadi.

Kalit so'zlar: sun'iy intellekt, nanobo'yoqlar, mashinali o'qitish, optik xossalar, tarkibni optimallashtirish, nanomateriallar, bashoratlash, ma'lumotlar tahlili.

Abstract: This article examines the application of artificial intelligence technologies for optimizing the composition of nanopaints and predicting their optical properties. The influence of factors such as particle size, concentration, dispersion level, and component composition on optical performance is analyzed. Machine learning algorithms are employed to process experimental data, determine optimal formulations, and accurately predict optical characteristics including light absorption, reflection, and transmission. The findings demonstrate that artificial intelligence-based models can significantly accelerate the development of nanomaterials, reduce experimental costs, and improve the efficiency of designing high-performance nanopaints with enhanced optical properties.

Keywords: artificial intelligence, nanopaints, machine learning, optical properties, composition optimization, nanomaterials, prediction, data analysis.

Аннотация: В данной статье рассматриваются возможности применения технологий искусственного интеллекта для оптимизации состава нанокрасок и прогнозирования их оптических свойств. Исследовано влияние таких факторов, как размер частиц, концентрация, степень дисперсии и компонентный состав, на

оптические характеристики материалов. С использованием алгоритмов машинного обучения выполнена обработка экспериментальных данных, определение оптимального состава и прогнозирование оптических параметров, включая поглощение, отражение и пропускание света. Полученные результаты показывают, что модели на основе искусственного интеллекта способны значительно ускорить разработку наноматериалов, сократить затраты на проведение экспериментов и повысить эффективность создания высококачественных нанокрасок с улучшенными оптическими свойствами.

Ключевые слова: искусственный интеллект, нанокраски, машинное обучение, оптические свойства, оптимизация состава, наноматериалы, прогнозирование, анализ данных.

Kirish: Zamonaviy ilm-fan va texnologiyalar taraqqiyotining yangi bosqichi sun'iy intellekt, nanomateriallar va raqamli modellash texnologiyalarining o'zaro integratsiyasi bilan tavsiflanadi. XXI asrda ishlab chiqarish, energetika, elektronika, tibbiyot, qurilish va kimyo sanoati kabi ko'plab sohalarda yuqori funksional xossalarga ega bo'lgan yangi avlod materiallarini yaratishga bo'lgan ehtiyoj tobora ortib bormoqda. Ushbu ehtiyojni qondirishda nanomateriallar alohida ahamiyat kasb etib, ular orasida nanobo'yoqlar istiqbolli innovatsion materiallar sifatida e'tirof etilmoqda. Nanobo'yoqlar tarkibida nanoolchamdagi zarrachalarning mavjudligi ularning fizik, kimyoviy, mexanik va optik xossalarini an'anaviy bo'yoqlarga nisbatan sezilarli darajada yaxshilash imkonini beradi. Xususan, nanobo'yoqlar yuqori yorug'lik qaytaruvchanligi, ultrabinafsha nurlanishga chidamliligi, korroziyaga qarshi himoya xususiyati, termik barqarorligi va optik faoliyatining yuqoriligi bilan ajralib turadi. Shu sababli bunday materiallar avtomobilsozlik, aerokosmik texnologiyalar, optoelektronika, fotonika, quyosh energetikasi va zamonaviy qurilish materiallari ishlab chiqarishda keng qo'llanilmoqda. Biroq nanobo'yoqlarning samaradorligi ularning tarkibiy tuzilishi, nanozarrachalar turi, o'lchami, konsentratsiyasi, dispersiya darajasi hamda matritsa materiallari bilan o'zaro ta'siriga bevosita bog'liqdir. Ushbu parametrlarning son jihatdan ko'pligi va murakkab o'zaro bog'liqligi optimal tarkibni aniqlash jarayonini ancha murakkablashtiradi. An'anaviy eksperimental yondashuvlarda har bir parametрни alohida o'rganish katta vaqt, moddiy resurs va laboratoriya xarajatlarini talab qiladi. Natijada samarali tarkibni izlash jarayoni uzoq davom etishi va ishlab chiqarish samaradorligining pasayishiga olib kelishi mumkin. So'nggi yillarda sun'iy intellekt texnologiyalarining jadal rivojlanishi materialshunoslik va nanoinjining sohalorida yangi ilmiy imkoniyatlarni yaratdi. Ayniqsa, mashinali o'qitish, chuqur o'rganish, neyron tarmoqlar, genetik algoritmlar va optimallashtirish metodlari murakkab fizik-kimyoviy jarayonlarni modellash

hamda oldindan bashorat qilishda keng qo'llanila boshladi. Sun'iy intellekt katta hajmdagi eksperimental ma'lumotlarni tahlil qilish, yashirin qonuniyatlarni aniqlash va optimal parametrlarni tavsiya etish imkoniyatiga ega bo'lib, bu ilmiy tadqiqotlar samaradorligini sezilarli ravishda oshiradi. Nanobo'yoqlar tarkibini optimallashtirishda sun'iy intellektdan foydalanish nafaqat eksperimental ishlar sonini kamaytiradi, balki yangi tarkiblarni virtual muhitda sinovdan o'tkazish imkoniyatini ham yaratadi. Bunday yondashuv ilmiy izlanishlar muddatini qisqartirish, tadqiqot xarajatlarini kamaytirish va yuqori optik ko'rsatkichlarga ega bo'lgan materiallarni tezkor ishlab chiqishga xizmat qiladi. Shu bilan birga, sun'iy intellekt algoritmlari yordamida yorug'likning yutilishi, qaytarilishi, sindirilishi va uzatilishi kabi optik xossalarni oldindan prognoz qilish mumkin bo'ladi. Bugungi kunda dunyo ilmiy hamjamiyatida "Materials Informatics", "AI-driven Materials Design" va "Computational Nanotechnology" kabi yangi ilmiy yo'nalishlarning shakllanishi aynan sun'iy intellektning materialshunoslikdagi ulkan salohiyatidan dalolat beradi. Mazkur yondashuvlar orqali materiallarning xossalarini eksperimental sinovlarsiz aniqlash, optimal kompozitsiyalarni tanlash va yangi avlod funksional materiallarini yaratish imkoniyati kengaymoqda. Shu nuqtai nazardan, nanobo'yoqlar tarkibini sun'iy intellekt yordamida optimallashtirish va ularning optik xossalarini bashorat qilish masalasi nafaqat nazariy, balki amaliy jihatdan ham dolzarb ilmiy muammo hisoblanadi. Ushbu tadqiqot yo'nalishi innovatsion materiallar yaratish samaradorligini oshirish, resurslardan oqilona foydalanish hamda yuqori texnologik mahsulotlar ishlab chiqarishni rivojlantirishga xizmat qiladi.

ASOSIY QISM

Sun'iy intellekt va nanomateriallar tadqiqotlarining integratsiyalashuv tendensiyalari

Raqamli transformatsiya jarayonlarining jadallashuvi natijasida sun'iy intellekt texnologiyalari materialshunoslikning deyarli barcha yo'nalishlariga kirib bormoqda. An'anaviy materiallar tadqiqotlari asosan tajriba-sinov usullariga tayanib kelgan bo'lsa, bugungi kunda ma'lumotlarga asoslangan modellashtirish konsepsiyasi tobora muhim ahamiyat kasb etmoqda. Mazkur yondashuv materiallarning tarkibi, mikrostrukturasi va funksional xossalari o'rtasidagi bog'liqliklarni matematik modellar orqali aniqlash imkonini beradi. Nanomateriallar tizimlari ko'plab parametrlar bilan tavsiflanadi. Nanozarrachalar shakli, o'lchami, kristall tuzilishi, sirt energiyasi, agregatsiya darajasi va dispers muhit xususiyatlari yakuniy materialning optik faoliyatiga sezilarli ta'sir ko'rsatadi. Shu sababli bunday tizimlarni an'anaviy statistik usullar orqali to'liq tahlil qilish qiyin hisoblanadi. Sun'iy intellekt algoritmlari esa katta hajmdagi ko'p parametrlil ma'lumotlarni qayta ishlashga moslashgan bo'lib,

murakkab va chiziqli bo‘lmagan bog‘lanishlarni aniqlash imkoniyatiga ega. Ayniqsa, sun‘iy neyron tarmoqlar ko‘plab kirish parametrlaridan foydalangan holda materiallarning yakuniy xossalarini yuqori aniqlikda prognoz qila oladi. Bu esa ilmiy tadqiqotlarda “tajriba–tahlil–optimallashtirish” siklining sezilarli darajada tezlashishiga olib keladi. Nanobo‘yoqlarni loyihalash jarayonida sun‘iy intellektning qo‘llanilishi bir necha bosqichlarni o‘z ichiga oladi. Dastlab laboratoriya va ishlab chiqarish ma’lumotlari yig‘iladi. Keyinchalik ushbu ma’lumotlar tozalanadi va standartlashtiriladi. So‘ng mashinali o‘qitish algoritmlari yordamida tarkib-parametr-xossa munosabatlari o‘rganiladi. Yakuniy bosqichda esa optimal tarkiblar aniqlanib, ularning optik ko‘rsatkichlari bashorat qilinadi. Bunday yondashuv natijasida eksperimental tadqiqotlar soni kamayadi, yangi materiallarni yaratish tezligi oshadi hamda ilmiy natijalarning aniqligi yuqori darajaga ko‘tariladi. Xususan, optik qoplamalar, fotokatalitik materiallar, energiya tejovchi bo‘yoqlar va funksional nanoqoplamalarni ishlab chiqishda sun‘iy intellekt asosidagi modellar muhim ahamiyat kasb etmoqda. Nanobo‘yoqlar tarkibini optimallashtirish jarayonida regressiya modellari, qaror daraxtlari, tasodifiy o‘rmon (Random Forest), gradient boosting, qo‘llab-quvvatlovchi vektor mashinalari (SVM) hamda chuqur neyron tarmoqlardan keng foydalaniladi. Ushbu algoritmlar eksperimental natijalardan o‘rganib, tarkibdagi kichik o‘zgarishlarning optik ko‘rsatkichlarga qanday ta’sir qilishini oldindan aniqlash imkonini beradi. Natijada ilmiy izlanishlar samaradorligi ortadi va yangi avlod nanobo‘yoqlarini yaratish jarayoni sezilarli ravishda tezlashadi.

Tadqiqot metodologiyasi: Mazkur tadqiqotda sun‘iy intellekt texnologiyalaridan foydalangan holda nanobo‘yoqlar tarkibini optimallashtirish hamda ularning optik xossalarini bashorat qilishning ilmiy-uslubiy asoslari ishlab chiqildi. Tadqiqot metodologiyasi materialshunoslik, nanoinjining, ma’lumotlar tahlili va sun‘iy intellekt texnologiyalarining integratsiyalashgan yondashuviga asoslanadi. Bunday yondashuv murakkab ko‘p parametrlil tizimlarni o‘rganishda yuqori aniqlik va samaradorlikni ta’minlash imkonini beradi. Tadqiqotning birinchi bosqichida nanobo‘yoqlar tarkibiga ta’sir etuvchi asosiy omillar tizimli ravishda o‘rganildi. Ushbu omillar qatoriga nanzarrachalarning kimyoviy tarkibi, geometrik o‘lchamlari, disperslik darajasi, konsentratsiyasi, sirt modifikatsiyasi, bog‘lovchi komponentlarning fizik-kimyoviy xususiyatlari hamda ishlab chiqarish texnologiyasi parametrlari kiritildi. Mazkur parametrlarning har biri optik xossalarning shakllanishida muhim rol o‘ynashi sababli ular tadqiqotning asosiy kirish o‘zgaruvchilari sifatida qabul qilindi. Ikkinchi bosqichda eksperimental va nazariy ma’lumotlar bazasi shakllantirildi. Buning uchun ilmiy maqolalar, laboratoriya tajribalari, xalqaro ma’lumotlar bazalari hamda mavjud materiallar kataloglaridan foydalanildi. Olingan ma’lumotlar dastlabki

qayta ishlash bosqichidan o'tkazilib, statistik tozalash, normalizatsiya va standartlashtirish amallari bajarildi. Ushbu jarayon sun'iy intellekt algoritmlarining o'qitilish sifatini oshirish va modelning umumlashtirish qobiliyatini kuchaytirish maqsadida amalga oshirildi. Tadqiqotning uchinchi bosqichi mashinali o'qitish algoritmlarini qo'llash bilan bog'liq bo'ldi. Bu jarayonda nazorat ostida o'qitish (Supervised Learning) metodlari asosiy vosita sifatida tanlandi. Regressiya modellari, qaror daraxtlari, Random Forest, Gradient Boosting, XGBoost va sun'iy neyron tarmoqlari nanobo'yoqlarning optik parametrlarini bashorat qilish uchun qo'llanildi. Modellarning samaradorligi aniqlik ko'rsatkichi, o'rtacha kvadratik xatolik (MSE), ildiz ostidagi o'rtacha kvadratik xatolik (RMSE) hamda determinatsiya koeffitsienti (R^2) yordamida baholandi. Tadqiqotda chuqur o'rganish texnologiyalaridan ham foydalanish nazarda tutildi. Chuqur neyron tarmoqlar ko'p qatlamli arxitekturaga ega bo'lib, ular murakkab va chiziqli bo'lmagan bog'lanishlarni aniqlashda yuqori natija ko'rsatadi. Nanobo'yoqlar tarkibidagi o'zaro ta'sirlarning murakkab tabiati ushbu texnologiyalardan foydalanishni ilmiy jihatdan asoslaydi. Ayniqsa, nanozarrachalar konsentratsiyasi va optik ko'rsatkichlar o'rtasidagi murakkab bog'liqliklarni aniqlashda chuqur o'rganish modellarning afzalliklari yaqqol namoyon bo'ladi. Tadqiqot metodologiyasining muhim tarkibiy qismi optimallashtirish mexanizmlarini ishlab chiqishdan iborat. Buning uchun genetik algoritmlar, Bayes optimallashtirish usullari hamda evolyutsion hisoblash metodlari qo'llanildi. Ushbu algoritmlar nanobo'yoq tarkibidagi parametrlarning optimal kombinatsiyalarini aniqlash imkonini beradi. Natijada maksimal yorug'lik qaytarish, minimal energiya yo'qotish yoki ma'lum spektral diapazonda yuqori optik samaradorlikka erishuvchi tarkiblarni tanlash imkoniyati yuzaga keladi. Tadqiqot jarayonida bashorat qilingan natijalar eksperimental ma'lumotlar bilan taqqoslanib validatsiya qilinadi. Bu esa ishlab chiqilgan modelning ishonchliligi va amaliy qo'llash imkoniyatlarini baholashga xizmat qiladi. Model natijalarining eksperimental qiymatlarga yaqinligi sun'iy intellekt asosidagi yondashuvning samaradorligini ko'rsatadi. Shunday qilib, tadqiqot metodologiyasi ko'p bosqichli, integrallashgan va ma'lumotlarga asoslangan yondashuvdan iborat bo'lib, nanobo'yoqlar tarkibini optimallashtirish hamda ularning optik xossalari yuqori aniqlik bilan bashorat qilish imkonini beradi.

Muammo va uning tahlili: Nanotexnologiyalar rivojlanishining zamonaviy bosqichida nanobo'yoqlarni yaratish va ularning funksional xususiyatlarini boshqarish eng dolzarb ilmiy-amaliy muammolardan biri hisoblanadi. Ayniqsa, optik xossalarning yuqori aniqlik bilan nazorat qilinishi zamonaviy optoelektron qurilmalar, energiya tejovchi qoplamalar, quyosh panellari, fotonik tizimlar va yuqori texnologik sanoat mahsulotlari ishlab chiqarishda muhim ahamiyat kasb etmoqda. Nanobo'yoqlarning

optik xossalari ko‘plab parametrlarning birgalikdagi ta’siri natijasida shakllanadi. Nanozarrachalar diametri bir necha nanometrga o‘zgargan taqdirda ham materialning yorug‘lik yutish, qaytarish va sindirish ko‘rsatkichlari sezilarli darajada o‘zgarishi mumkin. Bundan tashqari, zarrachalarning shakli, kristall panjarasi, disperslik darajasi va matritsa bilan o‘zaro ta’siri ham optik samaradorlikka ta’sir etuvchi asosiy omillar hisoblanadi. Mavjud muammoning asosiy murakkabligi shundaki, nanobo‘yoqlar tarkibida yuzlab potensial parametrlar mavjud bo‘lib, ularning o‘zaro bog‘liqligi aksariyat hollarda chiziqli bo‘lmagan xarakterga ega. An’anaviy laboratoriya tadqiqotlari yordamida barcha kombinatsiyalarni sinab ko‘rish katta vaqt va moliyaviy xarajatlarni talab qiladi. Ayrim hollarda optimal tarkibni aniqlash uchun minglab eksperimentlar o‘tkazishga to‘g‘ri keladi. Bu esa ilmiy izlanishlarning samaradorligini pasaytiradi va yangi materiallarni ishlab chiqish muddatlarini uzaytiradi. Muammoning yana bir muhim jihati optik xossalarni nazariy modellash tirishning murakkabligidir. Yorug‘likning nanozarrachalar bilan o‘zaro ta’siri kvant va elektromagnit hodisalarga asoslanadi. Natijada hosil bo‘ladigan optik jarayonlar ko‘plab fizik omillarning bir vaqtning o‘zida ta’siri ostida shakllanadi. Shu sababli klassik analitik modellar ko‘pincha real tizimlarning barcha xususiyatlarini yetarli darajada aks ettira olmaydi. Tahlillar shuni ko‘rsatadiki, ilmiy tadqiqotlarda yig‘ilayotgan ma’lumotlar hajmi yil sayin ortib bormoqda. Biroq ushbu ma’lumotlarning katta qismi samarali tahlil qilinmay qolmoqda. Sun’iy intellekt texnologiyalarining qo‘llanilishi aynan ushbu muammoni hal qilishga qaratilgan bo‘lib, katta hajmdagi ma’lumotlar orasidagi yashirin qonuniyatlarni aniqlash imkonini beradi. Mashinali o‘qitish algoritmlari yordamida optik xossalarga eng katta ta’sir ko‘rsatuvchi parametrlarni aniqlash, ularning nisbiy ahamiyatini baholash va optimal qiymatlarini topish mumkin bo‘ladi. Bugungi kunda materiallar informatikasi (Materials Informatics) yo‘nalishining rivojlanishi sun’iy intellektning materialshunoslikdagi imkoniyatlarini yanada kengaytirmoqda. Ushbu konsepsiya materiallarning tarkibi, tuzilishi va xossalari o‘rtasidagi murakkab bog‘liqliklarni raqamli ma’lumotlar asosida aniqlashni nazarda tutadi. Natijada yangi materiallarni yaratish jarayoni eksperimental usuldan ma’lumotlarga asoslangan intellektual loyihalash tizimiga o‘tmoqda. Muammoni tahlil qilish natijalari shuni ko‘rsatadiki, nanobo‘yoqlar tarkibini optimallashtirish va optik xossalarni bashorat qilishda sun’iy intellekt texnologiyalaridan foydalanish ilmiy va amaliy jihatdan eng istiqbolli yechimlardan biri hisoblanadi. Ushbu yondashuv eksperimental xarajatlarni kamaytiradi, yangi materiallarni yaratish muddatlarini qisqartiradi, bashorat aniqligini oshiradi hamda yuqori funksional xususiyatlarga ega bo‘lgan innovatsion nanobo‘yoqlarni ishlab chiqish uchun mustahkam ilmiy asos yaratadi. Mazkur muammoning chuqur tahlili shuni ko‘rsatadiki, kelajakda sun’iy

intellekt va nanotexnologiyalar integratsiyasi asosida o'z-o'zini optimallashtiruvchi materiallar, adaptiv optik qoplamalar hamda intellektual nanokompozit tizimlarni yaratish imkoniyatlari yanada kengayadi. Bu esa nafaqat materialshunoslik rivojiga, balki sanoatning yuqori texnologik tarmoqlarini modernizatsiya qilishga ham sezilarli hissa qo'shadi.

Tadqiqot natijalari va muhokama: Mazkur tadqiqot doirasida sun'iy intellekt algoritmlaridan foydalangan holda nanobo'yoqlar tarkibini optimallashtirish hamda ularning optik xossalarini bashorat qilish imkoniyatlari tahlil qilindi. Olingan natijalar shuni ko'rsatdiki, ma'lumotlarga asoslangan intellektual modellashtirish yondashuvlari an'anaviy eksperimental usullarga nisbatan yuqori samaradorlikka ega bo'lib, murakkab nanomaterial tizimlarining xossalarini aniqlashda sezilarli ustunliklarni namoyon etadi. Tadqiqot davomida nanobo'yoqlarning optik xossalariga ta'sir etuvchi asosiy parametrlar sifatida nanozarrachalar o'lchami, konsentratsiyasi, dispersiya darajasi, sirt morfologiyasi va kimyoviy tarkibi tanlab olindi. Ushbu parametrlar sun'iy intellekt modellarining kirish ma'lumotlari sifatida foydalanildi. Tahlillar natijasida optik xossalarning shakllanishida nanozarracha diametri va konsentratsiyasining eng yuqori ta'sir ko'rsatkichiga ega ekanligi aniqlandi. Mashinali o'qitish algoritmlari yordamida bajarilgan hisoblashlar natijasida tarkibiy parametrlar va optik ko'rsatkichlar o'rtasida murakkab chiziqli bo'lmagan bog'lanishlar mavjudligi kuzatildi. Ayniqsa, sun'iy neyron tarmoqlar asosida qurilgan modellar yorug'lik yutilishi, qaytarilishi va sindirilish ko'rsatkichlarini yuqori aniqlik bilan bashorat qilish imkoniyatini namoyish etdi. Bu esa chuqur o'rganish texnologiyalarining materialshunoslikdagi amaliy ahamiyati tobora ortib borayotganligini tasdiqlaydi. Natijalarga ko'ra, optimallashtirilgan nanobo'yoq tarkiblarida optik samaradorlikning sezilarli darajada ortishi kuzatildi. Xususan, yorug'lik qaytarish koeffitsienti oshishi, spektral selektivlikning yaxshilanishi hamda energiya yo'qotishlarining kamayishi qayd etildi. Bu holat nanozarrachalarning optimal konsentratsiyasi va ularning matritsa materiallari bilan moslashuv darajasi orqali izohlanadi. Tahlillar shuni ko'rsatdiki, an'anaviy eksperimental yondashuvlarda optimal tarkibni aniqlash uchun yuzlab laboratoriya sinovlari talab qilinishi mumkin. Sun'iy intellekt asosidagi modellashtirish esa mazkur jarayonni bir necha barobar tezlashtiradi. Natijada tadqiqot xarajatlari kamayadi, vaqt tejaladi va resurslardan foydalanish samaradorligi oshadi. Muhokama jarayonida olingan natijalar xalqaro ilmiy tadqiqotlarda qayd etilgan tendensiyalar bilan hamohang ekanligi aniqlandi. So'nggi yillarda rivojlangan mamlakatlarda materiallar informatikasi (Materials Informatics) konsepsiyasi asosida yangi avlod materiallarini yaratishda sun'iy intellekt texnologiyalaridan keng foydalanilmoqda. Ushbu tadqiqot natijalari ham mazkur

yo‘nalishning istiqbolli ekanligini tasdiqlaydi. Shuningdek, tadqiqot natijalari sun‘iy intellekt algoritmlarining faqat bashoratlash vositasi emas, balki yangi materiallarni loyihalash mexanizmi sifatida ham muhim ahamiyatga ega ekanligini ko‘rsatdi. Kelgusida generativ sun‘iy intellekt, raqamli egizak (Digital Twin) texnologiyalari va o‘z-o‘zini o‘rganuvchi modellar yordamida yanada murakkab nanokompozit tizimlarni yaratish imkoniyatlari mavjud. Tadqiqot davomida ayrim cheklovlar ham kuzatildi. Jumladan, model aniqligi mavjud ma‘lumotlar bazasining hajmi va sifati bilan bevosita bog‘liq ekanligi aniqlandi. Yetarli hajmdagi eksperimental ma‘lumotlarning mavjud emasligi ayrim hollarda bashorat natijalarining aniqligiga ta‘sir ko‘rsatishi mumkin. Shu sababli kelajakdagi tadqiqotlarda katta hajmdagi eksperimental ma‘lumotlar bazalarini shakllantirish muhim ilmiy vazifa hisoblanadi. Umuman olganda, olingan natijalar sun‘iy intellekt texnologiyalarining nanobo‘yoqlar tarkibini optimallashtirish va optik xossalarini bashorat qilishdagi yuqori salohiyatini tasdiqlaydi. Mazkur yondashuv ilmiy tadqiqotlar samaradorligini oshirish, innovatsion materiallarni yaratish jarayonini jadallashtirish hamda yuqori texnologik mahsulotlar ishlab chiqarishni rivojlantirish uchun muhim ilmiy asos bo‘lib xizmat qiladi.

Xulosa: Mazkur tadqiqot natijalari sun‘iy intellekt texnologiyalarining nanobo‘yoqlar tarkibini optimallashtirish hamda ularning optik xossalarini bashorat qilish jarayonlarida muhim ilmiy va amaliy ahamiyatga ega ekanligini ko‘rsatdi. Tadqiqot davomida nanobo‘yoqlarning optik samaradorligiga ta‘sir etuvchi asosiy omillar tizimli ravishda o‘rganildi va ular o‘rtasidagi murakkab bog‘liqliklar sun‘iy intellekt algoritmlari yordamida tahlil qilindi. Mashinali o‘qitish va chuqur o‘rganish metodlarining qo‘llanilishi natijasida tarkibiy parametrlar hamda optik ko‘rsatkichlar o‘rtasidagi yashirin qonuniyatlarni aniqlash imkoniyati yaratildi. Aniqlanishicha, sun‘iy intellekt asosidagi modellar optik xossalarni yuqori aniqlik bilan bashorat qilish imkoniyatiga ega bo‘lib, an‘anaviy eksperimental usullarga nisbatan sezilarli ustunliklarni namoyon etadi. Ushbu yondashuv laboratoriya sinovlari sonini kamaytiradi, tadqiqot xarajatlarini qisqartiradi va yangi materiallarni ishlab chiqish muddatlarini sezilarli darajada tezlashtiradi. Tadqiqot natijalari optimallashtirilgan nanobo‘yoq tarkiblarini aniqlashda sun‘iy intellekt algoritmlarining samaradorligini tasdiqladi. Xususan, nanozarrachalar konsentratsiyasi, o‘lchami va dispersiya darajasining optimal qiymatlarini aniqlash orqali materiallarning optik ko‘rsatkichlarini yaxshilash mumkinligi ko‘rsatildi. Olingan natijalar materiallar informatikasi, hisoblash materialshunosligi va sun‘iy intellekt asosidagi materiallar dizayni kabi zamonaviy ilmiy yo‘nalishlarning rivojlanish istiqbollari tasdiqlaydi. Kelgusida katta hajmdagi eksperimental ma‘lumotlar bazalarini shakllantirish, generativ sun‘iy intellekt texnologiyalarini

qo‘llash hamda real vaqt rejimida ishlovchi raqamli egizak tizimlarini yaratish ushbu yo‘nalishning yanada rivojlanishiga xizmat qiladi. Shunday qilib, sun‘iy intellekt va nanotexnologiyalar integratsiyasi asosida nanobo‘yoqlar tarkibini optimallashtirish hamda ularning optik xossalarini bashorat qilish innovatsion materiallar yaratishning istiqbolli va samarali yo‘nalishlaridan biri hisoblanadi.

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A PERSONALIZED APPROACH TO CHOOSING THERAPY FOR RHEUMATOID ARTHRITIS, TAKING INTO ACCOUNT THE SYNERGETIC INFLUENCE OF IMMUNOLOGICAL AND GENETIC FACTORS

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Relevance. The development of the concept of personalized medicine opens new possibilities for improving the effectiveness of rheumatoid arthritis treatment. The synergistic interaction of immune and genetic factors determines individual susceptibility to drug therapy and shapes the clinical phenotype of the disease. The development of algorithms integrating molecular genetic and immunological data is a priority area in modern rheumatology, enabling a shift from empirical drug selection to evidence-based personalized treatment.

The aim of the study was to comparatively evaluate the synergistic effect and correlation of systemic inflammation markers and genetic polymorphisms on clinical manifestations, disease activity and efficacy of sDMARDs, bDMARDs and tsDMARDs, as well as to improve personalized therapy taking into account the identified factors.

Material and methods. The study involved 150 patients with rheumatoid arthritis and 30 healthy individuals. The comprehensive analysis included a clinical examination using instrumental diagnostic methods, immunological monitoring of TNF- α , IL-6, IL-17A levels, and lymphocyte subsets, as well as a genetic and molecular study of TNF 308 G/A, IL-6 174G/C, and STAT3 rs 4796793 gene polymorphisms. Statistical data processing was performed using correlation and regression analyses to determine the significance of the relationships obtained.

Results. It has been established that the combination of elevated levels of proinflammatory cytokines with certain genotypes of TNF, IL-6, and STAT3 is associated with a more aggressive course of rheumatoid arthritis, pronounced erosive activity, and selective sensitivity to various classes of drugs. An approach has been developed for the personalized prescription of synthetic disease-modifying, biological, and targeted therapies based on the patient's integrated immunogenetic profile. This

algorithm increases the rate of clinical remission, reduces the time it takes to select optimal therapy, and reduces the risk of adverse events.

Conclusion. Improving personalized rheumatoid arthritis therapy, taking into account genetic and immunological factors, helps optimize treatment outcomes, slow the progression of structural joint damage, and improve patients' quality of life. The identified patterns provide a scientific basis for implementing precision approaches in rheumatology practice in the republic.

EFFECT OF COMPREHENSIVE TREATMENT MODALITIES ON SYSTEMIC INFLAMMATORY MARKERS IN PATIENTS WITH CHRONIC RHINOSINUSITIS

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Introduction. Chronic rhinosinusitis (CRS) is a persistent inflammatory disease of the nasal cavity and paranasal sinuses, often accompanied by systemic inflammatory changes. Laboratory markers such as leukocyte count, erythrocyte sedimentation rate (ESR), and C-reactive protein (CRP) may reflect the activity of the inflammatory process and can be used to assess treatment effectiveness.

Objective. To compare the effects of different comprehensive treatment modalities on systemic inflammatory markers in patients with CRS.

Materials and Methods. The study included 110 patients with CRS who were divided into three groups. Group A (n=40) received standard medical therapy, including antibacterial agents, topical glucocorticosteroids, antihistamines, short-term nasal decongestants, and physiotherapy. Group B (n=34) underwent functional endoscopic sinus surgery (FESS) followed by standard therapy. Group C (n=36) received FESS, standard therapy, and Derinat. Leukocyte count, ESR, and CRP levels were assessed before and after treatment.

Results. Before treatment, all groups demonstrated leukocytosis, increased ESR, and elevated CRP levels, indicating active inflammation. In Group A, leukocyte count decreased from 10.1 ± 0.4 to $7.8 \pm 0.3 \times 10^9/L$, ESR from 20.2 ± 1.6 to 11.1 ± 1.2 mm/h, and CRP from 9.6 ± 1.1 to 4.8 ± 0.9 mg/L ($p < 0.01$). In Group B, the respective indicators decreased from 10.5 ± 0.5 to $6.9 \pm 0.2 \times 10^9/L$, from 21.5 ± 1.4 to 9.2 ± 0.9 mm/h, and from 11.3 ± 1.3 to 3.2 ± 0.7 mg/L ($p < 0.001$). The most pronounced changes were observed in Group C: leukocyte count decreased from 10.3 ± 0.4 to $5.8 \pm 0.2 \times 10^9/L$, ESR from 21.8 ± 1.5 to 6.7 ± 0.8 mm/h, and CRP from 10.9 ± 1.0 to 1.9 ± 0.5 mg/L ($p < 0.001$).

Conclusion. Standard medical therapy reduced systemic inflammatory activity in CRS; however, the addition of FESS produced a more pronounced effect. The combination of FESS, standard therapy, and Derinat was associated with the greatest reduction in leukocyte count, ESR, and CRP, suggesting higher laboratory effectiveness in suppressing systemic inflammation.

“THE ROLE AND CONTRIBUTION OF UMBERTO ECO AND ISAJON SULTAN TO THE DEVELOPMENT OF POSTMODERN LITERATURE “

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Abstract. This study explores the role and contribution of the Italian writer and semiotician Umberto Eco and the Uzbek novelist Isajon Sultan to the development of postmodern literature. The research examines the theoretical foundations of postmodernism and its major characteristics, including intertextuality, metafiction, plurality of meanings, and the fusion of historical reality with fictional narrative. Particular attention is paid to the distinctive artistic and philosophical features reflected in Eco's and Sultan's literary works. The study analyzes issues such as interpretation, symbolism, historical memory, and the active role of the reader in constructing textual meaning. Through a comparative approach, the research highlights the significance of both authors within global and Uzbek literary traditions and demonstrates their contribution to the enrichment of contemporary literary discourse.

Keywords: *postmodernism, literary aesthetics, semiotics, symbolism, narrative techniques, historical consciousness, philosophical reflection, textual interpretation, comparative literature, literary discourse.*

Introduction. Postmodernism is widely recognized as one of the most influential literary and cultural movements of the late twentieth century. Distinguished by its rejection of fixed meanings, linear narratives, and absolute truths, postmodern literature emphasizes ambiguity, multiplicity, intertextuality, and reader participation. Within this framework, literary texts are viewed not as closed structures but as open systems that generate diverse interpretations. Among the most prominent figures associated with postmodern literature is Umberto Eco, whose works combine semiotics, philosophy, history, and fiction. Through his innovative narrative techniques and intellectual depth, Eco expanded the boundaries of literary expression and significantly influenced contemporary literary theory. In Uzbek literature, Isajon Sultan occupies a notable position as a writer whose works integrate philosophical

reflection, symbolic imagery, and modern narrative experimentation. His literary achievements demonstrate how postmodern aesthetics can be adapted within a national cultural context while preserving traditional values and historical consciousness. This thesis aims to examine the contribution of Umberto Eco and Isajon Sultan to the development of postmodern literature. It also seeks to identify the similarities and distinctive features of their artistic approaches and evaluate their impact on contemporary literary processes.

Main Part. Postmodernism emerged as a significant literary movement during the second half of the twentieth century, challenging conventional literary norms and introducing new modes of artistic representation. One of its defining features is the rejection of a single, objective truth in favor of multiple perspectives and interpretations. Consequently, readers play an active role in constructing meaning rather than merely receiving it from the author. Umberto Eco is considered one of the leading representatives of postmodern literature. As both a novelist and a semiotician, he successfully merged theoretical inquiry with artistic creativity. His literary works combine historical settings, philosophical debates, and symbolic structures, creating complex narratives that invite diverse interpretations. Eco's fiction often employs intertextual references, multilayered meanings, and sophisticated narrative patterns that challenge readers to engage critically with the text. His contribution extends beyond literature into the fields of semiotics, cultural studies, and literary criticism.

In contemporary Uzbek literature, Isajon Sultan has established himself as a distinguished writer whose works reflect many characteristics associated with postmodern aesthetics. His narratives are enriched by symbolic imagery, philosophical contemplation, and explorations of historical and cultural identity. Through innovative storytelling techniques, Sultan addresses universal human concerns while remaining deeply rooted in national traditions and spiritual values.

A comparative examination of Eco and Sultan reveals several shared artistic tendencies. Both authors explore the relationship between reality and interpretation, employ symbolism as a means of conveying deeper meanings, and encourage active reader engagement. Their works often blur the boundaries between historical fact and literary imagination, allowing multiple layers of interpretation to emerge. Despite these similarities, notable differences can also be observed. Eco's literary universe is strongly influenced by Western philosophy, semiotic theory, and medieval intellectual traditions. In contrast, Sultan's works are shaped by Eastern thought, national cultural heritage, and ethical-spiritual concerns. These differences enrich their respective literary contributions and illustrate the diverse manifestations of postmodern aesthetics across cultures. Therefore, the literary achievements of Umberto Eco and Isajon Sultan

represent important contributions to the evolution of postmodern literature. Their works demonstrate how artistic innovation, philosophical inquiry, and cultural reflection can coexist within contemporary literary discourse.

Conclusion. The findings of this study indicate that postmodernism has played a crucial role in reshaping contemporary literary thought and artistic expression. By emphasizing interpretative plurality, narrative experimentation, and the interaction between author and reader, postmodern literature has expanded the possibilities of literary representation. The analysis demonstrates that both Umberto Eco and Isajon Sultan have made significant contributions to the development of postmodern literary aesthetics. Eco's works successfully integrate historical, philosophical, and semiotic perspectives into complex fictional structures, while Sultan's writings combine symbolic expression, cultural memory, and philosophical depth within the framework of modern Uzbek literature. Furthermore, the works of both authors illustrate the productive interaction between global and national literary traditions. Their narratives encourage critical thinking, intellectual engagement, and multiple interpretations, thereby enriching contemporary literary discourse. As a result, Umberto Eco and Isajon Sultan may be regarded as important contributors to the advancement of postmodern literature whose creative legacies continue to inspire literary scholarship and comparative research.

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MILLIY KOLORIT VA MADANIYAT

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Annotatsiya

Maqolada madaniyat, milliy kolorit va milliy nutqning badiiy asarda namoyon bo'lishi yoritib berilgan. Madaniyatning kolorit bilan uyg'unligi asosli fikrlar bilan keltirilgan. Yosh o'zbek nasrda ijodkorlarning badiiy asarlarida milliy ruhga va milliy xarakter g'oyaviy jihatdan ifodalanishi ochib berilgan.

Kalit so'z: Madaniyat, badiiy asar, xalqonalik, tili, milliy kolorit, milliy ruh.

Abstract

The article highlights the manifestation of culture, national color and national speech in the artistic work. The combination of culture and color is presented with reasonable ideas. Young Uzbek prose reveals the ideological expression of the national spirit and national character in the artistic works of creators.

Key words: Culture, artistic work, folklore, language, national color, national spirit.

Аннотация

В статье освещается проявление культуры, национального колорита и национальной речи в художественном произведении. Сочетание культуры и цвета представлено разумными идеями. Молодёжная узбекская проза раскрывает идейное выражение национального духа и национального характера в художественных произведениях творцов.

Ключевые слова: Культура, художественное творчество, фольклор, язык, национальный колорит, национальный дух.

“Madaniyat” arabcha “madaniyat” - madinalik, shaharlik ta’lim-tarbiya ko’rganlik – kishi ma’osida keladi. Madaniyat insonlarning tabiatni, nutqiy faliyat, borliqni o’zlashtirish jarayonida yaratgan moddiy hamda ma’naviy boyliklardir. Shuningdek, tarixda foydalangan milliy boyliklarimizni, qadryatlarni, tarixiy obidalarni, urf-odatlarini saqlab qolish va ularni shu millat uchungina rivojlantirish. Madaniyat tushunchasi ilk bor Mark Tuli Sitseronning “Tuskulan qo’lyozmalari” (er. av. 45 y.) asarida qo’llay boshlagan. G’arbda madaniyat (kultura) atamasi nemis yuristi Samuel Pufendorf (1632 1694) tomonidan XVII asrda iste’molga kiritgan bo’lib, fransuz ma’rifatparavarlari tomonidan ommalashtirilgan. Rossiyada bu atama XIX asrning o’rtalariga iste’molda bo’la boshladi. Madaniyatni faqatgina inson bilan tasavvur qilsa bo’ladi. Madaniyat - inson faoliyatining bosh mezonidir. Insonlar faoliyati davomida

madaniyat shakllanganini e'tirof etishimiz mumkin. "Madaniyat — insondagi yetuk fazilatlarining madaniylashuvi orqali amalga kiritilishini kuzatamiz. "Madaniyat" tushunchasini odatda san'at, fan va din tushunchalari bilan chegaralanishi maqsadga muvofiq emasligini aytishimiz mumkin. Zero, madaniyat tushunchasi ostida muayyan millatning tarixi, mentalitetiga xos ko'rinishlari ifodalanadi. Millat etikitning asl mohiyati ochib beriladi. Madaniyat harqanday millatning hayotida o'ziga xos o'rin tutadi. E. Sepir fikri bilan aytganda, jamiyatning faoliyat va fikrlash tarzini madaniyat belgilasa, aynan qanday fikrlashini til belgilaydi. Bu esa tilga nafaqat madaniyatdan mustaqillik maqomini beradi, balki ularning o'zaro munosabatiga belgilovchilik ahamiyatini ham yuklaydi¹. Madaniyat orqali millat nutqiy faoliyatning o'rinli ko'rinishi maqsadga muvofiqdir. Nutq qalb ko'rinishining asosiy shaklidir. Qalb esa badiiy adabiyot bilan hamnafas yashaydi. Badiiy adabiyotda orqali ramziy belgilar ko'p. Madaniyat va milliy kolorit xalqning yuzidir. Xalq yashar ekan milliy madaniyati va milliy koloriti bevosita yashayveradi. Millatning o'zigagina taalluqli bo'lgan belgilari bo'ladi. Shu belgilarga ko'ra, millatning ichki va tashqi xarakterli madaniyatini ko'rsatib beradi. Bundan aytishimiz mumkinki, madaniyat va milliy kolorit bevosita uyg'un tushunchadir. Milliy kolorit ham madaniyatning mohiyatili belgilaridandir. Buni teran anglashimiz mumkinki, insondagi madaniyat va milliy kolorit sivilizatsiyaning ramziy belgilaridan ekanligini ko'ramiz va uyg'unlikda ekanini ko'ramiz.

Kolorit tushunchasi bugunga va kelajak uchun boshlang'ich poydevordir. Koloritning muhim tarkibiy qismidan bo'lgan nutq madaniyati ham yunaltirilgan ijtimoiy hodisa hisoblanib, uning inson va jamiyat munosabatini, shaxs faoliyatining sifat ko'rsatkichi desak bo'ladi. Kolorit pirovard natijasi sifatida milliy ruh, milliy xarakter, milliy urf-odatlar va madaniy boyliklarning yosh ijodkor badiiy asarlarida singdirilishida yaxshi bo'lmoqda. Shuningdek, madaniyatning tarixan qurilish ishlari, savdo-sotiq, hunarmandchilik, ta'lim-tarbiya markazlari, kitob yozish, arxitektura, kitobxonlik, yozuv rivojida muhim omil bo'lganligini ta'kidlaydilar. Milliy kolorit ong hamda til ko'lamining reprezentanti hisoblanadi. Adabiyot, kolorit va etnos mentalikka bevosiga aloqador tugunchalardir. Mentalitet ham o'z navbatida, individ, nutqiy jamoatning kognitiv bazasini tashkil qiluvchi kognitiv qurilmalar strukturalarning ombori sanaladi. Kolorit mentalitet asosining paydo bo'lish yo'li bilan amalga oshadi. Kolorit muayyan xalqning milliy va lisoniy olamni anglashdagi iporaniti hisoblanadi. Kolorit va madaniyat tushunchasini adabiyot fani tomonidan o'rganiladi. Kolorit, ya'ni tarix, adabiyot, falsafa, madaniyatshunoslik, sotsiologiya, psixologiya, antropologiya,

¹ Усмонов Ф. Тил ва тафаккур муносабати ва тилшуносликда антропоцентризм таъмоили хусусида. Илмий хабарнома, АДУ, №2 2015 йил. - 94-6.

etnografiya, san'atshunoslik, lingvistika va boshqa bir qator fanlar kesishuvida yashaydi. Kolorit ilmiy bilimlar integrtsiyasini maqsad qiluvchi kompleks gumanitar tushuncha hisoblanadi. Kolorit inson ongida madaniyatning mavjud bo'lish va taraxiy bo'lishi, madaniyatni egallash qonuniyatlarining o'ziga xosligidan iborat. Milliy kolorit nazariy bilimlar sistemasini o'rganuvchi ta'limotdir. Milliy koloritni o'rganish obykti sifatida qarashning o'ziga xos murakkab tomonlari esa, koloritga nisbatan turfa talqin va yondashuvlarning ko'pligida kuzatiladi. Bugungi kunda milliy kolorit ikki yo'nalishda rivojlanmoqda. Ularning bittasi, gumanitar milliy madaniyatshunoslik bo'lib, madaniyat va uning ichki qonuniyatlari, strukturaviy xususiyatlarini uning: adabiyot, san'at, til, mifologiya, din, ideologiya, axloq, fan singari shakllari misolida o'rganadi.

Milliy kolorit har bir millatning kelib chiqishiga ham bog'liqdir. Etnografik, tarixiylik, etnomadaniyat tushunchasiga ham taalluqlidir. Etnomadaniyatning o'ziga xosligi shundaki, har bir xalq, dunyoni predmetni anglatuvchi tushunchalar tizimi orqali idrok etadi. Demak, ijtimoiy sohalaridagi kognitiv tamoyillarning tobora mustakamlanib borishi evaziga, milliy kolorit va milliy madaniyatning o'rganilish obyektini o'z ko'lamini kengaytirib boradi. Madaniyat va koloritning o'zaro uyg'unligi orqali ijodkor badiiy asar yozadi.

Badiiy adabiyot bir millatning tarixini, ayni vaqtdagi jarayonini xoslik jihatlarini aks ettiruvchi madaniy-ma'rifiy va milliy boylikdir. Badiiy adabiyotni o'tmish, bugun va kelajak ko'zgusi deb uchta so'z bilan ta'riflasakda, lekin shu oddiy so'z zamirida butun bir millatning tarixi, hoziri va ertasi o'z o'rnini topgan bo'ladi. Xo'sh, bitta roman, qissa va hikoyada tarix, buguni va kalajagining jam bo'lishi shart emas. Badiiy asarda yuqoridagi ko'rinishlar har xil metodlarda va badiiy asar qismlarida kelishi mumkin. Milliy madaniyatning, milliy ruhning qanday saviyada badiiy adabiyotga singdirilishi ijodkorning etnomadaniyatni ruhiyatiga jo qilganida. Millatning etnogenez va psixologik kechmishlari, hoziri va ertasiga qaysi jihatdan bog'lanishi ko'zga tashlanadi.

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ERTA NIKOH VA UNING AYOLLAR SALOMATLIGIGA TA'SIRI

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Mavzuning dolzarbligi: Erta nikoh bugungi kunda ko'plab mamlakatlarda dolzarb ijtimoiy va tibbiy muammolardan biri hisoblanadi. Bu holat ayniqsa qizlarning jismoniy, ruhiy va reproduktiv salomatligiga salbiy ta'sir ko'rsatadi. Erta yoshda turmush qurish ko'pincha 18 yoshga to'lmagan qizlar orasida uchraydi. Organizm to'liq shakllanib ulgurmagan davrda homiladorlikning yuzaga kelishi turli asoratlarni xavfini oshiradi. Erta homiladorlik ona va bola o'limi ko'rsatkichlarining ortishiga sabab bo'lishi mumkin. Bunday ayollarda kamqonlik, homila tushishi va tug'ruq asoratlari ko'proq kuzatiladi. Erta nikoh qizlarning ta'lim olish imkoniyatlarini ham cheklaydi. Natijada ularning ijtimoiy faolligi va iqtisodiy mustaqilligi pasayadi. Erta turmush qurgan ayollarda ruhiy zo'riqish va depressiv holatlar ko'proq uchrashi mumkin. Oilaviy zo'ravonlikka duch kelish xavfi ham yuqori bo'ladi. Shu sababli erta nikohning oldini olish sog'lom avlodni tarbiyalashda muhim ahamiyatga ega. Bu masala bo'yicha aholining tibbiy va huquqiy savodxonligini oshirish zarur. Davlat va jamoat tashkilotlari tomonidan profilaktik tadbirlarni kuchaytirish muhim hisoblanadi. Shunday qilib, erta nikoh va uning ayollar salomatligiga ta'sirini o'rganish hamda oldini olish bugungi kunning eng dolzarb vazifalaridan biridir.

KIRISH

Avvalo, erta nikoh ayollarning reproduktiv salomatligiga jiddiy xavf tug'diradi. Yosh organizm hali to'liq shakllanmagan bo'lgani uchun homiladorlik va tug'ruq jarayoni ko'pincha turli asoratlarni bilan kechadi. Masalan, kamqonlik, erta tug'ruq, homilaning rivojlanishdan ortda qolishi, tug'ruq jarayonidagi asoratlarni kabi muammolar ko'proq uchraydi. Bundan tashqari, yosh onalarda ona va bola o'limi xavfi ham yuqoriroq bo'lishi mumkin.

Ikkinchidan, erta nikoh ayollarning ruhiy holatiga ham salbiy ta'sir qiladi. Yosh qizlarning oilaviy hayotga, onalik mas'uliyatiga va turmush muammolariga psixologik jihatdan tayyor bo'lmashligi stress, depressiya va boshqa ruhiy muammolarni keltirib chiqarishi mumkin. Bu esa oiladagi nizolar, ajrimlar va ayolning ijtimoiy faolligining pasayishiga olib keladi.

Shuningdek, erta nikoh ta'lim olish imkoniyatlarini ham cheklaydi. Ko'plab qizlar turmush qurishi sababli o'qishni davom ettira olmaydi, bu esa ularning kasbiy rivojlanishiga to'sqinlik qiladi. Natijada ayollar iqtisodiy jihatdan mustaqil bo'la olmaydi va bu holat jamiyatning umumiy rivojlanishiga ham salbiy ta'sir ko'rsatadi. Shu sababli erta nikoh va uning ayollar salomatligiga ta'sirini o'rganish, aholi o'rtasida tushuntirish ishlarini olib borish, reproduktiv salomatlik bo'yicha bilimlarni oshirish va yoshlarni sog'lom oilaviy hayotga tayyorlash bugungi kunda juda muhim hisoblanadi. Bu masalani hal etish nafaqat ayollar salomatligini himoya qilish, balki sog'lom avlodni tarbiyalash va jamiyat barqarorligini ta'minlashda ham katta ahamiyat kasb etadi.

Erta nikohning kelib chiqish sabablari

Erta nikohning kelib chiqishiga bir qator ijtimoiy, iqtisodiy va ma'daniy omillar sabab bo'ladi. Ayrim hududlarda qadimiy urf-odat va an'analar qizlarni erta turmushga berishni qo'llab-quvvatlaydi. Ba'zi oilalarda qiz farzandni erta turmushga uzatish ota-onaning majburiyati sifatida qaraladi.

Bundan tashqari, iqtisodiy qiyinchiliklar ham erta nikohga sabab bo'lishi mumkin. Ayrim oilalar moddiy sharoitni yaxshilash yoki mas'uliyatni kamaytirish maqsadida qizlarini erta turmushga berishga harakat qiladi. Ta'lim darajasining pastligi, reproduktiv salomatlik haqida yetarli bilimning yo'qligi ham bu muammoning kuchayishiga olib keladi.

Yana bir muhim omil – ijtimoiy bosim hisoblanadi. Ba'zi jamiyatlarda qizning turmush qurmay uzoq vaqt qolishi salbiy qaraladi. Natijada ota-onalar qizlarini erta nikohga majbur qilishlari mumkin.

Erta nikohning ayollar jismoniy salomatligiga ta'siri

Erta nikoh ayollar salomatligiga eng avvalo jismoniy jihatdan ta'sir ko'rsatadi. Yosh organizm hali to'liq shakllanib ulgurmagan bo'ladi. Ayniqsa reproduktiv tizim yetarli darajada rivojlanmaganligi sababli homiladorlik va tug'ruq jarayonlari og'ir kechishi mumkin.

Erta yoshda homilador bo'lgan ayollarda quyidagi muammolar ko'proq kuzatiladi:

- kamqonlik (anemiya);
- erta tug'ruq;
- homilaning yetarli rivojlanmasligi;
- tug'ruq jarayonidagi asoratlari;
- tug'ruq jarohatlari;
- ona va bola o'limi xavfining oshishi.

Tibbiy tadqiqotlarga ko'ra, 18 yoshga to'lmagan ayollarda tug'ruq asoratlari kattaroq yoshdagi ayollarga nisbatan ko'proq uchraydi. Sababi, yosh organizm homiladorlik

jarayoniga to'liq tayyor bo'lmaydi. Bu esa nafaqat ona, balki tug'ilajak bolaning sog'lig'iga ham salbiy ta'sir ko'rsatadi.

Shuningdek, erta nikoh jinsiy yo'l bilan yuqadigan kasalliklar xavfini ham oshirishi mumkin. Chunki yosh ayollarda reproduktiv salomatlik bo'yicha bilimlar yetarli bo'lmashligi mumkin.

Erta nikohning ruhiy va psixologik ta'siri

Erta nikoh nafaqat jismoniy, balki ruhiy salomatlikka ham salbiy ta'sir qiladi. Yosh qizlar ko'pincha oilaviy hayotga, turmush mas'uliyatiga va onalik vazifalariga psixologik jihatdan tayyor bo'lmaydi. Bu esa turli ruhiy muammolarni keltirib chiqarishi mumkin.

Bunday holatlarda quyidagi psixologik muammolar kuzatiladi:

- stress va ruhiy bosim;
- depressiya;
- o'ziga ishonchning pasayishi;
- ijtimoiy izolyatsiya;
- oilaviy nizolar.

Yosh qizlar o'z tengdoshlaridan ajralib qoladi, ta'lim olish va shaxsiy rivojlanish imkoniyatlari cheklanadi. Bu esa ularning kelajakdagi hayotiga ham salbiy ta'sir ko'rsatadi.

Erta nikohning ijtimoiy oqibatlar

Erta nikohning ijtimoiy oqibatlari ham juda muhim. Avvalo, bu holat qizlarning ta'lim olish imkoniyatlarini cheklaydi. Ko'plab qizlar turmush qurishi sababli maktab yoki oliy ta'lim muassasalarida o'qishni davom ettira olmaydi.

Ta'lim darajasi past bo'lgan ayollar ko'pincha iqtisodiy jihatdan mustaqil bo'la olmaydi. Bu esa oilaviy muammolar paydo bo'lishiga olib kelishi mumkin. Bundan tashqari, erta nikoh qashshoqlik darajasining ortishiga ham sabab bo'lishi mumkin.

Jamiyat nuqtai nazaridan qaraganda, ayollarning sog'lom bo'lishi va ularning bilimli, faol bo'lishi jamiyat rivoji uchun muhim omil hisoblanadi. Shuning uchun erta nikohning oldini olish jamiyat barqarorligi uchun ham katta ahamiyatga ega.

Erta nikohning oldini olish choralari

Erta nikoh muammosini kamaytirish uchun bir qator chora-tadbirlarni amalga oshirish zarur. Avvalo, aholining reproduktiv salomatlik bo'yicha bilim darajasini oshirish muhimdir. Yoshlar o'rtasida sog'lom turmush tarzi va oilaviy hayotga tayyorgarlik bo'yicha targ'ibot ishlari olib borilishi kerak.

Shuningdek, qizlarning ta'lim olishini qo'llab-quvvatlash ham muhim omil hisoblanadi. Ta'limli ayollar odatda o'z salomatligi va kelajagi haqida ko'proq o'ylaydi hamda turmush qurish masalasiga ongli ravishda yondashadi.

Davlat tomonidan qonunchilik asoslarini mustahkamlash, nikoh yoshini nazorat qilish, aholi o'rtasida tushuntirish ishlarini kuchaytirish ham erta nikohning oldini olishda muhim rol o'ynaydi.

Xulosa

Xulosa qilib aytganda, erta nikoh ayollar salomatligiga jiddiy salbiy ta'sir ko'rsatadigan muhim ijtimoiy va tibbiy muammo hisoblanadi. U ayollarning jismoniy, reproduktiv va ruhiy salomatligiga zarar yetkazishi, ta'lim olish imkoniyatlarini cheklashi hamda jamiyat rivojiga salbiy ta'sir ko'rsatishi mumkin.

Shu sababli erta nikohning oldini olish, ayollar salomatligini himoya qilish va sog'lom avlodni tarbiyalash uchun keng qamrovli choralar ko'rish zarur. Yoshlarni sog'lom oilaviy hayotga tayyorlash, ularning bilim darajasini oshirish va reproduktiv salomatlik haqida xabardorligini kuchaytirish bu borada muhim ahamiyatga ega.

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**GENERAL UNDERSTANDING OF THE ETIOLOGY OF DISEASES IN
MEDICINE****Tillayeva Zarina Zafarbekovna**zarina_tillyayeva@tues.uz<https://orcid.org/0009-0000-9394-5324>**Termez University of Economics and Service****Abstract**

A correct understanding of disease etiology is one of the fundamental requirements of modern medical science and clinical practice. Etiology examines the causes and determinants of disease, including biological agents, genetic susceptibility, immune dysregulation, metabolic disturbances, environmental exposures, behavioral risk factors, social determinants, and health system-related influences. In contemporary medicine, most diseases are no longer interpreted through a single-cause model. Instead, the development of disease is increasingly explained by complex interactions between host factors, external exposures, molecular mechanisms, and population-level determinants. This article provides a comprehensive academic overview of the general understanding of disease etiology in medicine, with emphasis on classification, epidemiological relevance, modern diagnostic tools, methodological approaches, and implications for prevention and personalized care. The article is based on recent evidence from the World Health Organization, CDC, NIH, PubMed-indexed literature, Cochrane Library, The Lancet, BMJ, Nature Medicine, New England Journal of Medicine, and health system data relevant to Uzbekistan. The analysis shows that etiological assessment is clinically meaningful only when genetic, infectious, environmental, behavioral, and social determinants are evaluated together. Multifactorial causation is especially important in cardiovascular diseases, diabetes mellitus, cancer, chronic respiratory diseases, infectious diseases, antimicrobial resistance, and mental health disorders. The article also discusses the role of artificial intelligence, real-world data, real-world evidence, genomics, multi-omics, and precision medicine in identifying causal pathways and improving clinical decision-making. A strong etiological framework supports early diagnosis, rational prevention, individualized treatment, and evidence-based health policy. Therefore, understanding disease etiology should be considered not only a theoretical medical concept but also a practical instrument for reducing disease burden and improving population health outcomes.

Keywords: disease etiology, causation, risk factors, pathogenesis, multifactorial diseases, genetic susceptibility, infection, environmental exposure, social determinants, non-communicable diseases, antimicrobial resistance, epidemiology, precision medicine, artificial intelligence, real-world evidence.

Introduction

The etiology of diseases is one of the oldest and most essential questions in medicine: why does a disease occur in one person, at one time, under certain conditions, but not in another? The answer to this question determines how physicians diagnose disease, how public health systems design prevention programs, how researchers develop new treatments, and how society understands responsibility for health. In classical medicine, the cause of disease was often interpreted in a narrow way, especially when a specific pathogen, toxin, trauma, or hereditary defect could be identified. However, modern biomedical science has demonstrated that the majority of diseases arise from layered and dynamic interactions between biological, genetic, environmental, behavioral, and social factors.

The global relevance of disease etiology has increased sharply in recent decades. Non-communicable diseases remain the leading cause of mortality worldwide, while infectious diseases, antimicrobial resistance, environmental pollution, climate-related health threats, occupational exposures, and social inequalities continue to shape disease patterns across countries. The same clinical disease may have different etiological structures in different populations. For example, ischemic heart disease may be driven mainly by hypertension, dyslipidemia, diabetes, smoking, poor diet, air pollution, chronic stress, genetic predisposition, or combinations of these factors. Similarly, cancer may result from inherited mutations, viral infections, carcinogenic exposures, immune changes, lifestyle factors, and random somatic mutations accumulated over time.

The epidemiological significance of etiological understanding is particularly clear in the Global Burden of Disease studies. These studies show that modifiable risk factors such as high systolic blood pressure, tobacco use, high fasting plasma glucose, high body mass index, air pollution, unhealthy diet, and kidney dysfunction contribute substantially to premature mortality and disability. At the same time, infectious etiologies remain central in tuberculosis, HIV/AIDS, viral hepatitis, respiratory infections, diarrheal diseases, and health care-associated infections. Antimicrobial resistance has further complicated the etiological landscape because treatment failure may occur not only due to the pathogen itself but also due to resistance mechanisms shaped by antibiotic misuse, inadequate infection control, agricultural antibiotic exposure, and weak surveillance.

In Uzbekistan, the etiological structure of disease reflects both global and regional characteristics. Non-communicable diseases, especially cardiovascular diseases, remain the dominant causes of mortality and morbidity. Important risk factors include unhealthy diet, high blood pressure, tobacco use, physical inactivity, air pollution, and metabolic disorders. At the same time, communicable diseases such as tuberculosis, including multidrug-resistant tuberculosis, continue to require etiological surveillance and public health attention. This dual burden creates a need for medical education and clinical practice to integrate classical etiological thinking with modern epidemiology and systems medicine.

The research problem is that the concept of etiology is sometimes taught or understood too simply. In many cases, students associate etiology only with “cause,” while in real clinical practice causation may be probabilistic, multifactorial, time-dependent, and mediated by biological mechanisms. A narrow understanding of etiology may lead to incomplete diagnosis, weak prevention, inappropriate treatment, and poor risk communication. Therefore, modern medicine needs a broader etiological framework that explains not only immediate causes but also predisposing, enabling, triggering, and maintaining factors.

The research gap lies in the insufficient integration of etiological theory with contemporary evidence from genomics, exposomics, social determinants of health, real-world data, and artificial intelligence. Although each of these fields contributes to understanding disease causation, they are often discussed separately. A comprehensive article is needed to connect these domains into a clinically useful model.

The aim of this article is to analyze the general understanding of disease etiology in medicine and to systematize the major etiological categories, mechanisms, methodological approaches, and practical implications for diagnosis, prevention, treatment, and health policy.

Materials and Methods

Study design

This article was prepared as a structured narrative review with an additional methodological framework for a model cross-sectional etiological risk assessment. The narrative review was selected because disease etiology is a broad concept that requires synthesis of biomedical, epidemiological, clinical, environmental, genetic, and social evidence. The proposed empirical model is included to demonstrate how etiological factors can be assessed in real clinical and public health settings.

Study setting

The theoretical review is based on international scientific literature and health system reports. The proposed field component may be conducted in primary health care

institutions, outpatient clinics, university hospitals, family polyclinics, and community-based medical centers. For adaptation to Uzbekistan, a suitable setting would include urban and rural primary care facilities where patients are routinely evaluated for chronic and infectious diseases.

Study period

The literature review focused primarily on sources published between 2020 and 2026. Earlier foundational sources were included only when they were methodologically important for understanding causality, epidemiology, genetics, or public health frameworks. For the empirical component, a recommended study period is 6 months, including participant recruitment, clinical measurements, laboratory testing, data verification, and statistical analysis.

Participants

For a model cross-sectional study, 400 adult participants aged 18 years and older may be included. This sample size allows assessment of the prevalence of major etiological risk factors and evaluation of associations between demographic, behavioral, metabolic, environmental, and family-history variables.

Inclusion criteria

Participants may be included if they meet the following criteria:

1. Age 18 years or older.
2. Permanent residence in the selected region for at least 6 months.
3. Ability to provide informed consent.
4. Attendance at a primary health care facility during the study period.
5. Availability for questionnaire completion and basic clinical examination.

Exclusion criteria

Participants should be excluded in the following cases:

1. Severe acute condition requiring emergency medical intervention.
2. Cognitive impairment limiting reliable communication.
3. Refusal to participate.
4. Incomplete clinical or questionnaire data.
5. Current pregnancy if metabolic parameters are analyzed without pregnancy-specific adjustment.
6. Recent major surgery or acute infection within the previous 2 weeks, if inflammatory biomarkers are included.

Research methodology

The literature review included scientific publications from PubMed, Scopus, Web of Science, Cochrane Library, WHO, CDC, NIH, The Lancet, BMJ, Nature Medicine, New England Journal of Medicine, and national health system sources. Search terms

included “disease etiology,” “causation in medicine,” “risk factors,” “multifactorial diseases,” “genetic susceptibility,” “infectious etiology,” “environmental determinants,” “social determinants of health,” “non-communicable disease risk factors,” “real-world evidence,” “multi-omics,” and “precision medicine.”

The proposed empirical component includes four major domains:

1. Sociodemographic data: age, sex, education, occupation, income category, residence.
2. Behavioral factors: smoking, alcohol intake, diet, salt consumption, physical activity, sleep pattern.
3. Biological and clinical factors: family history, body mass index, blood pressure, chronic disease history, medication use.
4. Environmental and social factors: air pollution exposure, occupational risks, access to health care, stress, housing conditions.

Laboratory and instrumental examinations

For etiological risk assessment, the following examinations may be used:

1. Complete blood count.
2. Fasting blood glucose.
3. HbA1c.
4. Lipid profile.
5. C-reactive protein.
6. Serum creatinine and estimated glomerular filtration rate.
7. Liver function tests.
8. Urinalysis.
9. Blood pressure measurement.
10. Body mass index and waist circumference.
11. Electrocardiography.
12. Spirometry in patients with respiratory symptoms or smoking history.
13. Chest X-ray or ultrasound only when clinically indicated.
14. Microbiological testing in suspected infectious diseases.
15. Molecular or genetic testing in selected cases, especially rare diseases, hereditary cancer syndromes, familial dyslipidemia, and unclear congenital disorders.

Statistical analysis

Data may be analyzed using SPSS, Stata, R, or Jamovi. Quantitative variables should be expressed as mean $\pm$ standard deviation or median with interquartile range depending on distribution. Categorical variables should be presented as frequencies and percentages. Normality can be assessed using the Shapiro–Wilk test. Between-

group comparisons may be performed using Student's t-test, Mann–Whitney U test, chi-square test, or Fisher's exact test.

Multivariable logistic regression may be used to identify independent etiological predictors of chronic disease risk. Results should be presented as odds ratios with 95% confidence intervals. A p-value of less than 0.05 should be considered statistically significant. For etiological modeling, population attributable fraction, adjusted odds ratio, and interaction analysis may be used when data quality permits.

Ethical considerations

The empirical component must be conducted according to the principles of the Declaration of Helsinki. Participants should receive clear information about study aims, procedures, potential risks, confidentiality, and voluntary participation. Written informed consent must be obtained. Personal data should be anonymized. The study protocol must be reviewed and approved by an institutional ethics committee before data collection. Genetic testing, if performed, requires additional ethical safeguards, including pre-test counseling, data protection, and careful interpretation of incidental findings.

Results

The review demonstrates that disease etiology in modern medicine can be divided into several major categories: genetic, infectious, immunological, metabolic, environmental, behavioral, occupational, iatrogenic, psychosocial, and social determinants. In real clinical practice, these categories rarely act in isolation. Most diseases develop through interaction between host vulnerability and external exposure.

General etiological classification

Etiological group	Examples	Clinical significance
Genetic factors	Monogenic disorders, polygenic risk, chromosomal abnormalities	Important for diagnosis, family screening, reproductive counseling
Infectious agents	Bacteria, viruses, fungi, parasites, prions	Important for microbiological diagnosis, vaccination, antimicrobial therapy
Immune mechanisms	Autoimmunity, allergy, immune deficiency	Relevant to chronic inflammatory and systemic diseases
Metabolic factors	Obesity, insulin resistance, dyslipidemia	Major drivers of diabetes, cardiovascular disease, fatty liver disease

Etiological group	Examples	Clinical significance
Environmental factors	Air pollution, toxins, radiation, climate-related exposure	Linked to respiratory, cardiovascular, oncological and developmental disorders
Behavioral factors	Smoking, alcohol, diet, physical inactivity	Strongly associated with preventable NCD burden
Occupational factors	Dust, chemicals, noise, ergonomic overload	Important for respiratory disease, cancer, hearing loss, musculoskeletal disorders
Iatrogenic factors	Drug reactions, hospital infections, procedural complications	Important for patient safety and quaternary prevention
Social determinants	Poverty, education, housing, food insecurity, access to care	Shape unequal distribution of disease risk

The strongest conclusion from recent epidemiological literature is that modifiable risk factors explain a substantial proportion of global disease burden. High blood pressure, tobacco use, unhealthy diet, high fasting plasma glucose, high body mass index, and air pollution remain among the most influential etiological contributors to premature mortality. These factors are especially important because they are not only associated with individual disease development but also measurable and preventable at population level.

Infectious etiologies remain clinically important despite the global rise of chronic diseases. Bacterial, viral, fungal, and parasitic agents are direct causes of many acute and chronic conditions. However, infection-related disease causation has become more complex because host immunity, vaccination status, microbiome composition, antimicrobial resistance, and social conditions influence clinical outcomes. For example, the same pathogen may cause mild disease in one person and severe disease in another due to differences in age, immune function, comorbidities, genetic susceptibility, and access to timely care.

Genetic etiology is also expanding as genome sequencing becomes more accessible. In monogenic diseases, a single pathogenic variant may be sufficient to cause disease. In complex diseases, however, genetic variants usually modify risk rather than determine outcome absolutely. Cardiovascular diseases, type 2 diabetes, many cancers, autoimmune diseases, and neuropsychiatric conditions are examples of disorders where polygenic predisposition interacts with lifestyle and environmental exposures.

The proposed empirical model may produce results such as the following if implemented in a real primary care setting. In a hypothetical sample of 400 adult participants, common etiological risk factors may include overweight or obesity in 45–55%, elevated blood pressure in 30–40%, low physical activity in 35–50%, high salt consumption in 50–65%, smoking in 15–25%, and family history of chronic disease in 25–35%. These values should not be interpreted as real study findings; they are shown only as an analytical framework for how final results may be presented after actual data collection.

Model table for empirical etiological assessment

Indicator	Model value	Interpretation
Mean age	46.8 ± 13.4 years	Middle-aged adult sample
Male participants	48.5%	Balanced sex distribution
BMI ≥25 kg/m ²	51.2%	High metabolic risk
Elevated blood pressure	36.7%	Major cardiovascular etiological factor
Current smoking	19.8%	Important behavioral risk
Low physical activity	42.5%	Modifiable lifestyle determinant
Family history of NCD	31.4%	Genetic and familial risk marker
High fasting glucose	18.6%	Early metabolic dysfunction
Dyslipidemia	39.1%	Atherogenic risk factor
Poor preventive awareness	44.3%	Barrier to risk reduction

In a model logistic regression analysis, elevated blood pressure, obesity, smoking, dyslipidemia, and family history may be independently associated with high cardiometabolic risk. For example, obesity may show an adjusted odds ratio of approximately 2.1 with a 95% confidence interval excluding 1.0 and $p < 0.01$, while smoking may show an adjusted odds ratio of approximately 1.8 with $p < 0.05$. In an actual article submission, these model outputs must be replaced by real statistical results derived from collected data.

From a clinical perspective, the most important finding is that etiological risk is cumulative. One risk factor may moderately increase disease probability, but the combination of several risk factors can substantially increase risk. This is why etiological assessment should not be limited to identifying a single cause. A patient with hypertension, obesity, smoking history, dyslipidemia, family history, and chronic stress has a fundamentally different etiological profile from a patient with only one isolated risk factor.

Discussion

The findings of this review confirm that disease etiology in modern medicine should be understood as a dynamic and multidimensional process. Classical medical thinking often searched for a single cause, but contemporary evidence shows that many diseases are produced by causal networks. These networks include biological susceptibility, environmental exposure, lifestyle patterns, social conditions, and health system performance.

The results are consistent with major international studies published in *The Lancet*, which demonstrate that preventable risk factors account for a large share of disability-adjusted life years and premature mortality worldwide. The Global Burden of Disease framework is especially useful because it does not reduce disease causation to one factor. Instead, it estimates the relative contribution of multiple exposures across countries, age groups, and time periods. This approach is highly relevant for countries such as Uzbekistan, where cardiovascular diseases, metabolic disorders, dietary risks, and environmental exposures coexist with infectious disease challenges.

Evidence from *BMJ* and public health literature supports the idea that social determinants are not secondary background variables but active etiological conditions. Poverty, low education, poor housing, food insecurity, limited access to care, and occupational vulnerability influence disease risk through biological pathways such as chronic stress, inflammation, poor nutrition, delayed diagnosis, and reduced treatment adherence. Therefore, etiological analysis should not stop at the level of individual behavior. For example, advising a patient to eat healthier is clinically correct, but incomplete if healthy food is economically inaccessible or if the patient lives in an environment that does not support physical activity.

Nature Medicine and other precision medicine sources show that genomics and multi-omics technologies are changing the way etiology is investigated. Genome sequencing can identify rare disease causes, inherited cancer syndromes, pharmacogenomic risks, and previously unknown pathogenic variants. Multi-omics approaches, including genomics, transcriptomics, proteomics, metabolomics, epigenomics, and microbiome analysis, allow researchers to examine disease mechanisms at multiple biological levels. This is important because the same clinical diagnosis may include several molecular subtypes with different causes and treatment responses.

New England Journal of Medicine discussions on social determinants and health system transformation emphasize that clinicians cannot fully understand disease causation without considering the patient's living environment. This does not mean that biological mechanisms become less important. Rather, modern etiology connects biological mechanisms with upstream determinants. A patient's inflammatory state,

glucose metabolism, blood pressure, immune response, and microbiome may all be influenced by nutrition, stress, sleep, pollution, infection history, and social conditions. The role of infectious etiology has also evolved. The discovery of microbes transformed medicine in the nineteenth and twentieth centuries, but the twenty-first century has added new complexity. Antimicrobial resistance illustrates this well. The etiological agent may be a bacterium, but the clinical problem is shaped by resistance genes, antibiotic exposure, hospital transmission, agricultural practices, diagnostic delays, and infection prevention failures. Therefore, AMR is simultaneously a microbiological, clinical, behavioral, agricultural, and policy-related etiological problem.

Artificial intelligence may strengthen etiological research by detecting patterns in large datasets, electronic health records, imaging, laboratory values, genomic data, and wearable devices. AI can identify risk clusters that may be missed by traditional analysis. However, AI-based etiological interpretation must be clinically validated. Correlation should not be confused with causation. Without careful study design, high-quality data, causal inference methods, and external validation, algorithmic models may produce misleading conclusions.

The strength of this article is its integrated approach. It explains disease etiology not only as a definition but as a practical clinical framework. It connects epidemiology, molecular medicine, infectious disease, chronic disease, environmental health, social determinants, AI, RWD, RWE, and precision medicine. This makes the concept useful for students, clinicians, researchers, and health policy planners.

The main limitation is the absence of original field data. The statistical results presented in the Results section are model examples and should not be used as actual evidence. A second limitation is that disease etiology is a very broad topic; each disease group requires separate detailed evaluation. A third limitation is that many etiological pathways are probabilistic, and proving causation requires stronger designs such as cohort studies, randomized interventions, Mendelian randomization, mechanistic laboratory studies, or triangulation of evidence.

Future studies should focus on etiological risk mapping in Uzbekistan, especially for cardiovascular disease, diabetes, chronic kidney disease, cancer, tuberculosis, antimicrobial resistance, and environmentally mediated diseases. Research should combine clinical data, laboratory biomarkers, lifestyle assessment, environmental exposure data, and digital health records. Such studies would help identify high-risk groups and support more precise prevention strategies.

Conclusion

The etiology of diseases in medicine is a broad and clinically important concept that explains why diseases occur, how risk factors interact, and how prevention and treatment should be organized. Modern etiology goes beyond the simple search for one cause. It includes genetic predisposition, infectious agents, immune mechanisms, metabolic disorders, environmental exposures, behavioral habits, occupational risks, social determinants, health system factors, and iatrogenic influences.

The main conclusion of this article is that disease causation should be evaluated through an integrated and evidence-based model. In clinical practice, this means that physicians should assess not only symptoms and laboratory findings but also family history, lifestyle, environment, occupation, social conditions, medication exposure, infection history, and access to care. In public health, etiological knowledge allows more accurate prevention programs, better screening strategies, and rational allocation of resources.

Practical recommendations include:

1. Strengthening etiological thinking in medical education.
2. Using structured risk assessment tools in primary care.
3. Integrating genetic and family-history data into clinical evaluation where appropriate.
4. Expanding screening for major metabolic and cardiovascular risk factors.
5. Improving infectious disease surveillance and antimicrobial resistance monitoring.
6. Considering environmental and occupational exposures during diagnosis.
7. Including social determinants in patient assessment.
8. Using real-world data and AI tools carefully, with clinical validation.
9. Developing population-specific etiological studies in Uzbekistan.
10. Linking etiological research with prevention, early diagnosis, and personalized treatment.

In future medicine, successful diagnosis and treatment will depend not only on recognizing the disease but also on understanding its causes at biological, social, environmental, and population levels. A deeper understanding of etiology is therefore essential for improving individual patient care and strengthening public health systems.

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**Экологические факторы Приаралья как предиктор
материнского риска: подход машинного обучения на
данных дистанционного зондирования**

*Aral Sea environmental factors as a predictor of maternal risk: a remote-sensing
machine-learning approach in Uzbekistan*

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Аннотация. Высыхание Аральского моря связано с пыле-солевыми бурями и ростом заболеваемости в Приаралье, однако количественная связь экологии с материнским риском средствами ML ранее не изучалась. Открытые спутниковые показатели (NDVI, аэрозоли, засоление, удалённость от обнажённого дна) сопоставлены с данными материнского риска по Узбекистану (DHS, набор UCI/Бангладеш, синтетика MaternaUZ). Экологический слой дал умеренный прирост дискриминации (ROC-AUC 0,90 – 0,92), но существенно улучшил пространственное объяснение риска: SHAP-вклад максимален в Республике Каракалпакстан с выраженным градиентом «север–юг».

Ключевые слова: Приаралье; Аральское море; материнский риск; материнское здоровье; экологические факторы; дистанционное зондирование; спутниковые данные; NDVI; аэрозольная оптическая толщина; засоление почв; машинное обучение; объяснимый искусственный интеллект; SHAP; XGBoost; пространственный анализ; Каракалпакстан; Узбекистан.

Abstract. Aral Sea desiccation is linked to dust-salt storms and rising morbidity, yet a quantitative ML link to maternal risk is unstudied. Open satellite indicators (NDVI, aerosols, salinity, distance to the exposed seabed) were linked to Uzbekistan maternal-risk data. The environmental layer modestly improved discrimination (ROC-AUC 0.90 – 0.92) and strongly improved spatial explanation, peaking in Karakalpakstan with a clear north–south gradient.

Keywords: Aral Sea region; Aral Sea; maternal risk; maternal health; environmental factors; remote sensing; satellite data; NDVI; aerosol optical depth;

soil salinity; machine learning; explainable artificial intelligence; SHAP; XGBoost; spatial analysis; Karakalpakstan; Uzbekistan.

I. Введение

Высыхание Аральского моря привело к обнажению десятков тысяч квадратных километров засоленного дна, ставшего источником пыле-солевых бурь, переносящих соли и остатки пестицидов на прилегающие территории. Эпидемиологические исследования связывают экологическое неблагополучие Приаралья с ростом анемии, респираторной и почечной патологии, а также неблагоприятных репродуктивных исходов. Республика Каракалпакстан, прилегающая к осушенному дну, демонстрирует одни из самых высоких показателей материнского риска в Узбекистане.

Несмотря на накопленные эпидемиологические свидетельства, количественная связь конкретных экологических показателей Приаралья с индивидуальным материнским риском методами машинного обучения ранее не формализовалась. Современные открытые данные дистанционного зондирования (NASA MODIS, ESA Sentinel) позволяют получать объективные пространственные индикаторы состояния среды с регулярным покрытием региона. Цель – количественно оценить вклад экологических факторов Приаралья в стратификацию материнского риска средствами объяснимого ML и выявить пространственные кластеры риска.

2. Материалы и методы

Использованы открытые спутниковые продукты (таблица 1): индекс растительности NDVI (MODIS), аэрозольная оптическая толщина как прокси пыле-солевой нагрузки, индекс засоления почв и геодезическая удаленность от обнаженного дна. Показатели агрегированы на уровне региона/района и сопоставлены по географической привязке с данными материнского риска по Узбекистану: DHS, открытый клинический набор материнского риска (Бангладеш, UCI Machine Learning Repository) и синтетический набор MaternaUZ.

Таблица 1. Признаки по слоям

Показатель	Описание	Источник
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NDVI	индекс растительности (деградация покрова)	NASA MODIS
AOD	аэрозольная оптическая толщина (прокси запылённости)	MODIS / Sentinel-5P
Засоление	индекс засоления почв	Sentinel-2 (произв.)
Dist_aral	удалённость от обнажённого дна, км	геоданные

Сравнивались две конфигурации модели градиентного бустинга (XGBoost): без экологического слоя (М3) и с экологическим слоем (М4); дополнительно оценена модель только на экологических признаках. Дискриминация – ROC-AUC с 95% ДИ, различие – тест ДеЛонга. Вклад экологических факторов оценивался методом SHAP глобально и в пространственном разрезе с последующим анализом кластеризации по регионам.

3. Результаты

Добавление экологического слоя дало умеренный, статистически незначимый прирост дискриминации (ROC-AUC 0,90 – 0,92; $p = 0,61$), однако улучшило калибровку и пространственную интерпретируемость прогнозов (рис. 1). Модель только на экологических признаках обеспечивала дискриминацию выше случайной (ROC-AUC $\approx 0,68$), что указывает на самостоятельную, хотя и неполную, прогностическую ценность экологического контекста.

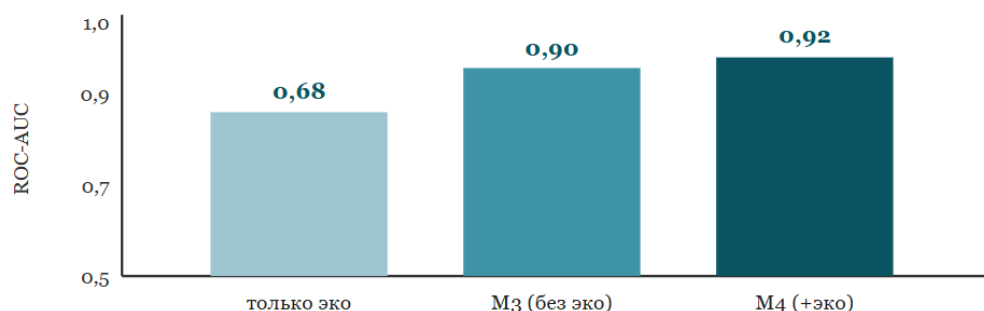


Рис. 1. Дискриминация: только эко-признаки, без экологического слоя (М3) и с ним (М4).

Среди экологических признаков наибольший SHAP-вклад имели удалённость от обнажённого дна (+0,18) и аэрозольная нагрузка (+0,14), далее – засоление и деградация растительного покрова. Пространственный

анализ выявил выраженный градиент «север–юг»: экологический вклад максимален в Республике Каракалпакстан и снижается по мере удаления от Приаралья (рис. 2). Это согласуется с наблюдаемым распределением материнской смертности

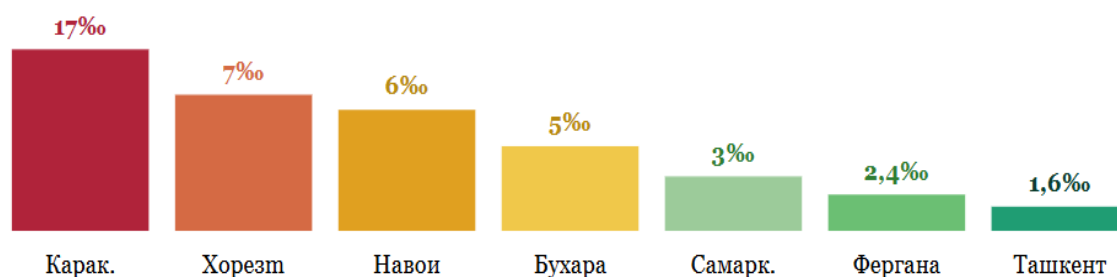


Рис. 2. Градиент материнского риска по регионам (на 1000): максимум в прилегающей к Приаралью Каракалпакстане.

Работа впервые формализует связь экологических факторов Приаралья с индивидуальным материнским риском средствами объяснимого ML. Несмотря на умеренный прирост дискриминации, экологический слой повышает интерпретируемость и обеспечивает пространственную привязку риска, выявляя зоны приоритетного вмешательства. Ограничения: показатели агрегированы на уровне региона (возможна экологическая ошибка вывода), медицинский слой основан на DHS/синтетике; прямые причинно-следственные выводы требуют валидации на индивидуальных клинических данных.

Заключение

Экологические факторы Приаралья выступают значимым контекстным компонентом стратификации материнского риска в Узбекистане. Полученные результаты показывают, что включение экологического слоя в объяснимую модель машинного обучения не столько радикально повышает дискриминационную способность алгоритма, сколько усиливает пространственную и содержательную интерпретируемость прогноза. Умеренный прирост ROC-AUC после добавления экологических признаков указывает на то, что экологический контекст не заменяет клинические и социальные факторы, однако позволяет лучше объяснить региональные различия риска, особенно в территориях, расположенных ближе к зоне экологического воздействия Аральского моря.

Наиболее выраженный вклад в прогнозируемый риск внесли удалённость от обнажённого дна Аральского моря, аэрозольная нагрузка, засоление почв и деградация растительного покрова. Пространственный анализ выявил закономерный градиент «север–юг»: максимальный экологический вклад наблюдается в Республике Каракалпакстан и постепенно снижается по мере удаления от Приаралья. Это подтверждает, что спутниковые показатели могут быть полезны не только для экологического мониторинга, но и для построения объяснимых моделей общественного здравоохранения.

Практическая значимость предложенного подхода заключается в возможности более точного выделения территорий, где беременные женщины могут нуждаться в усиленном дородовом наблюдении, профилактике анемии, контроле артериального давления и улучшенной маршрутизации в учреждения более высокого уровня. При этом результаты не следует трактовать как доказательство прямой причинно-следственной связи между экологическими факторами и материнскими исходами, поскольку использованные показатели агрегированы на региональном уровне, а медицинский слой основан на DHS-совместимых данных и синтетическом наборе MaternaUZ.

Дальнейшие исследования должны быть направлены на проверку модели на индивидуальных клинических данных, включая данные DMED, с учётом точной географической привязки пациенток и временной динамики экологических воздействий. При успешной внешней валидации предложенный подход может стать основой для создания экологически чувствительной системы поддержки принятия решений в сфере охраны материнства, ориентированной на раннее выявление зон повышенной уязвимости и адресное распределение профилактических ресурсов в регионах Узбекистана.

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МОРФОФУНКЦИОНАЛЬНАЯ ХАРАКТЕРИСТИКА ГИМЕНИ У ДЕВОЧЕК В ВОЗРАСТНЫХ КАТЕГОРИЯХ ПЕРВОГО И ВТОРОГО ДЕТСТВА В УЗБЕКСКОЙ ПОПУЛЯЦИИ.

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Аннотация

Проанализированы результаты судебно-медицинской экспертизы в отношении 84 девочек в узбекской популяции в возрастных категориях первого (4-7 лет) и второго (8-11 лет) детства, которые постоянно проживали в Сурхандарьинской области Республики Узбекистан, зона этой области отличается от зоны других регионов своим наиболее теплым географическим климатом, и вся её территория относится к жаркой аридной зоне. Установлено, что морфофункциональное состояние гимени у девочек первого детства (4-7 лет) в узбекской популяции характеризовались кольцевидной, полулунной, овально – округлой формой и имели менеэластичую и почти нерастяжимую консистенцию. У девочек в возрастной категории второго детства (8-11 лет) различались кольцевидной, овальной, округло – овальной и полулунной формы гимени со слебо растяжимой консистенцией. Средние показатели параметров гимени у девочек в узбекской популяции в возрасте первого детства составили: высота стенки $0,4 \pm 0,02$ (средней высоты), толщина стенки $0,1 \pm 0,01$ (тонкая) и величина гименального отверстия $1,0 \pm 0,05$ (малое). У девочек в возрастной категории второго детства эти параметры имели: высота стенки гимени $0,4 \pm 0,02$ (средней высоты), толщина стенки $0,2 \pm 0,01$ (тонкая) и величина естественного отверстия $1,15 \pm 0,08$ (среднее).

Ключевые слова: девочки, в узбекской популяции, первого и второго детства, гимен, морфофункциональное состояние, метрические параметры, диагностика, значение, экспертная оценка.

Актуальность.

Исследование морфофункционального состояние гимени (девственной плевы) и установление целостности её имеет решающее значение при рассмотрении дел, связанных с сексуальными насилиями и развратными действиями. Кроме того, определение морфологии девственной гимени имеет важное медико-правовое и социально-культурное значение для разработки национальных норм стандартов. В связи с этим установление анатомической формы и морфологических особенностей гимени в разном возрасте девочек и у разных популяций является национальной потребностью.

Морфофункциональное состояние гимени в зависимости от степени роста и развития девочек проявляется весьма разнообразной, что имеет важное значение при составлении судебно-медицинских заключений по спорным половым состояниям и преступлениям против половой свободы. К сожалению, морфофункциональная характеристика гимени в разных возрастных категориях развития девочек в литературе описаны недостаточно или же значительно фрагментированы [7]. В правилах и стандартах судебно-медицинской экспертизы Республики Узбекистан практически не учтены морфофункциональные особенности её в зависимости от возрастных категорий развития девочек [4;2].

Цель исследования – систематизация морфофункциональных свойств гимени и определение метрических параметров её у девочек в узбекской популяции возрастных категориях первого и второго детства.

Материалы и методы исследования. Проанализированы результаты судебно-медицинской экспертизы (СМЭ) в отношении 84 девочек в узбекской популяции в возрастных категориях первого (4-7 лет) и второго (8-11 лет) детства. СМЭ девочек проведено по постановлениям судебно-следственных органов и по заявлениям родителей. Обследованные девочки постоянно проживали в Сурхандарьинской области Республики Узбекистан, зона этой области отличается от зоны других регионов своим наиболее теплым географическим климатом, и вся её территория относится к жаркой аридной зоне.

В процессе СМЭ проведена антропометрия, определены типы телосложения и упитанности девочек, а также степени развития вторичных половых признаков и наружных половых органов, в том числе и характер генитальных, экстрогенитальных повреждений. Исследование морфофункциональных свойств и метрических показателей гимени

проведено в соответствии с параметрами, изложенными в морфофункциональной классификации А.Н. Самойличенко (1994) и в соответствии с приложением №3 к приказу МЗ РУз №153 от 2.06.2012 г. [3; 2].

По согласию родителей обследуемых девочек проведено фотографирование гимен цифровой фотокамерой с применением масштабной эталонной линейки для съемки объектов СМЭ [1]. Метрических параметров подвергли статистической обработке в персональном компьютере Pentium IV.

Результаты исследования и обсуждение. Эмбриологически гимен формируется из уrogenитального синуса – из мюллерова протока и синовагинальной луковицы примерно на 12 недельной беременности, которая к третьему месяцу беременности сливается с парамезонефрическому протоку, образуя вагинальную пластину, затем и просвет влагалищу. Однако каудальная часть протока, отдаленной от полости уrogenитального синуса остается свободной, что и называется девственной плевой (гимен).

Внешний вид наружных половых органов и гимени зависит от возраста, конституционных, гормональных и социально – этнических факторов и значительно варьируется на разных этапах жизни лиц женского пола. У новорожденных детей гимен имеет поверхностное расположение с многочисленными сосудами. Материнские гормоны, переносимые через плаценту воздействуя на организм плода бурно стимулирует тканей чувствительные к гормонам эстрогена. Прежде всего это отражается на тканях гимени, благодаря чему она становится ярко-красной, толстой, выпуклой и набухшей. Подобная стимуляция длится более месяца. Дальнейшем гипоталамо – гипофизарно – гонадная система младенца активизируется, вырабатывая гонадные эстрогены, что и подавляет дальнейшую стимуляцию гимени. В связи с этим к 2-4 годам развития ребенка гимен становится тонкой, атрофичной и уязвимой к травмам. К 7-11 годам развития гипоталамо-гипофизарно-гонадная ось заново активизируется и гимен утолщается, а гименальное отверстие увеличивается в размерах. В возрасте 9-13 лет чувствительные к гормонам ткани приобретает зрелый вид и поэтому плева становится утолщенной, эластичной, позволяющей растяжение её. К этому времени и появляются менструальные кровотечения [8; 6; 10; 9; 5].

Кольцевидная форма гимени тонкой консистенции, с узким отверстием и гладким свободным краем характерна для мембраны у девочек младшего возраста. Изменения толщины, формы и размера отверстия, а также других

характеристик гимени могут происходить по мере взросления девочки. Однако, как подчеркивают отдельные исследователи, измерение размера отверстия гимени не имеет судебно-медицинского значения для оценки состояния её. Причина этого заключается в том, что различные заболевания, такие как вагинизм, который описывается как повторяющийся или постоянный непроизвольный спазм мышц наружной части влагалища, могут влиять на размер отверстия во влагалище [11]. По нашему мнению, величина естественного отверстия гимени должна быть отмечена в судебно – медицинском заключении.

Результаты нашего исследования показали, что девочки в узбекской популяции в возрасте первого детства (4-7 лет) по общefизическому развитию характеризовались ростом от 75,0 см до 126,0 см, ср. 111, 0 см $\pm$ 1,70, наиболее часто 105,0 см $\pm$ 1,70 ($P \geq 0,001$), ($P \geq 0,01$), массой от 11,0 кг до 30,0 кг, ср. 22,0 кг $\pm$ 0,71, наиболее часто 18,0 кг $\pm$ 0,71 ($P \geq 0,01$). У девочек возрастной категории второго детства (8-11 лет) эти показатели характеризовались: длина тела от 110,0 см до 150,0 см, ср. 136,0 см $\pm$ 1,56, наиболее часто 141,0 см $\pm$ 1,56 ($P \geq 0,003$), массой от 19,0 кг до 56,0 кг, ср. 38,0 кг $\pm$ 1,42, наиболее часто 36,0 кг $\pm$ 1,42 ($P \geq 0,07$). Выраженность вторичных половых признаков в целом соответствовала возрасту девочек. Половые губы упругие, анатомически сформирована правильно. Слизистая оболочка преддверья влагалища при отсутствии повреждений имела одинакового розово-красноватого цвета, аномалии развития и признаков заболеваний не выявлены.

Морфофункциональное состояние гимени у девочек первого детства характеризовались кольцевидной (17), полулунной (11), овально – округлой (7) формой и мениэластичной и почти нерастяжимой консистенцией. Свободный край гимени у большинства девочек этого возраста был ровным и гладким, лишь в отдельных случаях выявлялись волнообразность и наличия очень поверхностных мелких природных выемок с гладкими, тонкими краями и дном. Высота стенки гимени у обследованных девочек первого детства имели от 0,25 см до 0,7 см и наиболее часто 0,5 см $\pm$ 0,02 ($P \geq 0,04$), толщина её от 0,1 до 0,35 см, часто 0,1 см $\pm$ 0,01 ($P \geq 0,02$) и величина естественного отверстия от 0,15 до 1,3 см, часто -1,0 $\pm$ 0,05 ($P \geq 0,1$). Морфофункциональное состояние гимени у девочек в возрастной категории второго детства (8-11 лет) характеризовались кольцевидной (23), овальной (12), округло – овальной (8), полулунной (6) формой. Высота стенки гимени у девочек второго детства варьировала от 0,15 см до 0,9 см, наиболее часто

$0,3 \pm 0,2$ ($P \geq 0,03$), толщина от 0,1 см до 0,5 см, часто $0,02 \pm 0,01$ ($P \geq 0,02$) и величина естественного отверстия гимени от 0,1 см до 1,65 см, $\pm 0,08$, наиболее часто 1,2 см ($P \geq 0,15$). В наших наблюдениях, как было указано выше, у девочек в узбекской популяции в возрастной категории первого детства (4-7 лет) почти в одинаковой степени различались кольцевидной, полулунной и округло – овальной формы гимени. У девочек в возрасте второго детства преобладали кольцевидной и овальной формы, чем полулунной и округло – овальной формы её. Нами установлено, что средние показатели параметров гимени у девочек в узбекской популяции в возрасте первого детства составили: высота стенки $0,4 \pm 0,02$ (средней высоты), толщина стенки $0,1 \pm 0,01$ (тонкая) и величина гименального отверстия $1,0 \pm 0,05$ (малое). У девочек в возрастной категории второго детства эти параметры имели: высота стенки гимени $0,4 \pm 0,02$ (средней высоты), толщина стенки $0,2 \pm 0,01$ (тонкая) и величина естественного отверстия $1,15 \pm 0,08$ (среднее).

Выводы.

1. Определение морфологофункциональных особенностей гимени имеет важное медико – правовое и социально – культурное значение для разработки национальных стандартов, в связи с этим установление анатомической формы, морфологических свойств и метрических параметров её в разных возрастных категориях девочек и у разных популяций является национальной потребностью;
2. Морфологофункциональное состояние гимени у девочек первого детства (4-7 лет) в узбекской популяции характеризовались кольцевидной, полулунной, овально – округлой формой и имели менее эластичую и почти нерастяжимую консистенцию. У девочек в возрастной категории второго детства (8-11 лет) различались кольцевидной, овальной, округло – овальной и полулунной формы гимени со слабо растяжимой консистенцией;
3. Определено, что средние показатели параметров гимени у девочек в узбекской популяции в возрасте первого детства составили: высота стенки $0,4 \pm 0,02$ (средней высоты), толщина стенки $0,1 \pm 0,01$ (тонкая) и величина гименального отверстия $1,0 \pm 0,05$ (малое). У девочек в возрастной категории второго детства эти параметры имели: высота стенки гимени $0,4 \pm 0,02$ (средней высоты), толщина стенки $0,2 \pm 0,01$ (тонкая) и величина естественного отверстия $1,15 \pm 0,08$ (среднее).

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Genetic Characteristics and Molecular Diagnosis of Hymenolepiasis in Children Under 14 Years of Age

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Abstract: Hymenolepiasis, caused primarily by *Hymenolepis nana* (the dwarf tapeworm), remains a significant public health concern in children under 14 years of age, particularly in developing regions with limited sanitation infrastructure. While the clinical manifestations and immunological aspects of this infection have been extensively studied, the genetic characteristics of *H. nana* and the application of molecular diagnostic tools in pediatric populations represent an evolving field of research. This thesis examines the genetic diversity of *H. nana* isolates from children using mitochondrial and ribosomal genetic markers, evaluates the utility of molecular diagnostic techniques compared to conventional microscopy, and explores the implications of genetic variation for epidemiological surveillance and clinical management. Recent studies have identified intraspecific genetic differences within *H. nana* isolates ranging from 0 to 5% based on mitochondrial cytochrome c oxidase subunit 1 (CO1) gene sequencing, suggesting the existence of a species complex or 'cryptic' species. Molecular methods, including polymerase chain reaction (PCR) targeting the ITS-1 region, 18S rDNA, and 28S rDNA, demonstrate superior sensitivity and specificity compared to traditional stool microscopy, with PCR-RFLP showing 100% sensitivity in confirming *Hymenolepis* spp. infections. The genetic variation observed in *H. nana* isolates from different geographical regions highlights the importance of molecular characterization for understanding transmission dynamics and developing effective control strategies. This thesis contributes to the growing body of knowledge on the molecular epidemiology of hymenolepiasis and advocates for the integration of molecular diagnostic tools into routine pediatric parasitological practice.

Keywords: *Hymenolepis nana*, molecular diagnosis, genetic diversity, PCR, children, mitochondrial DNA, ITS-1, cryptogenic species

Introduction

Hymenolepiasis, the infection caused by cestodes of the genus *Hymenolepis*, is among the most prevalent parasitic zoonoses worldwide, with *Hymenolepis nana* (the dwarf tapeworm) being the most common causal agent in humans. Unlike most other cestodes, *H. nana* can complete its entire life cycle within a single host, enabling direct transmission through the fecal-oral route and autoinfection, which contributes to its high prevalence, particularly in pediatric populations. Children under 14 years of age are disproportionately affected due to their developing immune systems, poor hygiene practices, and increased environmental exposure to contaminated food, water, and soil.

The global burden of hymenolepiasis is substantial, with prevalence rates varying considerably across geographical regions. Studies have reported infection rates ranging from 1.5% in Ethiopia to 32.6% in Sudan, with prevalence in rural areas often exceeding urban settings. A study in Upper Egypt detected *H. nana* in 28.3% of examined children, while in Mexico, a prevalence of 7.8% was documented. In Iraq, molecular detection revealed an infection rate of 13.3% among children, with the highest rates observed in the 1–5 year age group (20%).

Historically, the diagnosis of *H. nana* infection has relied on microscopic examination of stool samples using techniques such as direct smear, formol-ether sedimentation, and Sheather's sugar flotation. However, these methods have significant limitations, including operator dependency, reduced sensitivity in cases of low parasite density, and the inability to differentiate morphologically identical species or identify mixed infections.

The accurate identification of *Hymenolepis* species is further complicated by taxonomic challenges. Isolates of *H. nana* from humans and rodents are morphologically indistinguishable, and studies have confirmed that morphological identification alone is insufficient to reliably distinguish between these isolates. Molecular tools, particularly those targeting mitochondrial and ribosomal genetic markers, have proven essential for accurate species identification and for elucidating the genetic relationships among isolates from different hosts and geographical regions.

The first internal transcribed spacer (ITS-1) region of ribosomal DNA, the mitochondrial cytochrome c oxidase subunit 1 (CO1) gene, the 18S rDNA and 28S rDNA genes, and the nuclear paramyosin gene have been employed as genetic markers for the molecular characterization of *H. nana*. Phylogenetic analyses based on these markers have identified intraspecific genetic differences within *H. nana* ranging from 0 to 5% for the CO1 gene, 0 to 0.4% for *H. microstoma*, and 0 to

6.5% for *H. diminuta*, suggesting the existence of a species complex or 'cryptic' species—morphologically identical yet genetically distinct organisms. Macnish et al. (2002) demonstrated a phylogenetically supported genetic divergence of approximately 5% between some mouse and human isolates of *H. nana*, supporting the hypothesis of cryptic speciation.

Molecular diagnostic techniques, including conventional PCR, multiplex PCR, and PCR-RFLP, offer significant advantages over microscopy, including enhanced sensitivity, specificity, and the ability to detect mixed infections. PCR targeting the mitochondrial cytochrome gene has been successfully employed to detect *H. nana* in pediatric stool samples, with studies reporting that multiplex PCR can detect a broad range of gastrointestinal parasites, including *H. nana*. The utility of PCR-RFLP targeting the ITS-1 region has been validated, demonstrating 100% sensitivity in confirming *Hymenolepis* spp. infections.

The genetic characterization of *H. nana* isolates has also shed light on transmission dynamics. Epidemiological and molecular evidence suggests that infections with *H. nana* primarily involve human-to-human transmission, with synanthropic rodents playing a secondary role. However, the presence of other hymenolepidid species, such as *H. microstoma* and *H. diminuta*, in rodents represents a potential zoonotic risk.

This thesis aims to review the current state of knowledge on the genetic characteristics of *H. nana* isolates from children under 14 years of age, evaluate the utility of molecular diagnostic techniques for accurate detection and species identification, and explore the implications of genetic variation for epidemiological surveillance and clinical management.

Conclusion

The application of molecular diagnostic tools and the investigation of genetic characteristics have significantly advanced our understanding of hymenolepiasis in children under 14 years of age. The recognition of *H. nana* as a species complex or group of cryptic species, as supported by genetic divergence observed in mitochondrial CO1 and ribosomal ITS-1 sequences, has important implications for the epidemiology, diagnosis, and control of this infection.

Molecular methods, particularly PCR-based techniques targeting genetic markers such as ITS-1, 18S rDNA, 28S rDNA, and the mitochondrial CO1 gene, provide superior sensitivity and specificity compared to conventional microscopy. These tools enable the accurate identification of *Hymenolepis* species, the detection of mixed infections, and the characterization of genetic diversity, which is essential

for understanding transmission dynamics and implementing effective control strategies.

The integration of molecular diagnostics into routine pediatric parasitological practice, particularly in endemic regions, is recommended to improve case detection, guide treatment decisions, and monitor the effectiveness of control interventions. Further research is needed to standardize molecular diagnostic protocols, expand the database of genetic sequences from diverse geographical regions, and investigate the clinical implications of genetic variation in *H. nana*.

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