FREQUENCY OF ELEVATED URIC ACID LEVELS AMONG YOUNG PEOPLE

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Abstract: This study investigates the prevalence of elevated uric acid levels (hyperuricemia) among young individuals and its impact on kidney function. Hyperuricemia, even in asymptomatic cases, can serve as an early marker of metabolic disturbances and subclinical renal dysfunction. The findings highlight the distribution of hyperuricemia in youth, the contributing factors, and emphasize the need for preventive measures and lifestyle interventions. The results are important for developing strategies aimed at preserving kidney health and reducing the risk of chronic diseases in young populations.
Keywords: Hyperuricemia, Uric acid, Kidney function, Metabolic disturbances, Preventio.

INTRODUCTION

Uric acid is the final product of purine metabolism and plays an important role in the body's metabolic processes. An increase in its blood levels, known as hyperuricemia, is becoming an increasingly relevant issue even among young people. Although youth is traditionally considered a period of high physiological compensation, recent studies show a rising trend in elevated uric acid levels in this group. Even in the absence of clinical symptoms, elevated uric acid may serve as a marker of subclinical metabolic disturbances and early functional changes in the kidneys. Understanding the factors that influence uric acid levels in young individuals, as well as its prevalence, is important for preventing future cardiovascular and renal complications.

Relevance

The prevalence of hyperuricemia among young people is increasing in many countries and is associated with lifestyle changes, unhealthy diets, reduced physical activity, and genetic predisposition. Even moderate increases in uric acid can affect the endothelium of renal vessels and impair microcirculation. Studying the prevalence of hyperuricemia in youth helps identify risk groups, develop preventive measures, and enable timely correction of contributing factors. The relevance of this research is supported by the need for early detection of metabolic disturbances, prevention of chronic kidney diseases, and maintenance of overall health in young populations.

Main part

Uric acid is the final product of purine metabolism and plays an important role in maintaining the body's antioxidant defense system. At normal levels, it neutralizes free radicals, protecting cells and tissues, including renal and vascular structures, from oxidative damage. However, when serum uric acid levels rise, it can act as a pro-oxidant, promoting oxidative stress, inflammation, and endothelial dysfunction in the renal microvasculature. Among young individuals, elevated uric acid levels are often associated with dietary habits, including high consumption of purine-rich foods and fructose-

containing beverages, low physical activity, stress, and genetic predispositions. Even subclinical increases in uric acid can serve as an early warning signal for potential metabolic disturbances and initial renal changes. Prolonged mild hyperuricemia may impair glomerular and tubular microcirculation, induce low-grade inflammation, and trigger structural alterations in renal tissue. Research shows that uric acid levels are closely linked to endothelial function and oxidative processes. Monitoring uric acid in young populations is essential for the early detection of metabolic dysfunction. Awareness of uric acid's physiological and pathological roles allows healthcare providers to implement preventive strategies. These strategies aim to preserve renal and vascular health in youth and prevent long-term complications associated with hyperuricemia. Understanding the biochemical mechanisms also helps guide lifestyle and dietary recommendations to reduce future disease risk. Early recognition of elevated uric acid is therefore a cornerstone of preventive medicine in young adults.

Epidemiological studies conducted in various countries indicate that the prevalence of hyperuricemia among young individuals varies widely depending on socio-economic conditions, lifestyle, diet, and physical activity levels. Current research suggests that 10–25% of young adults have serum uric acid levels above the normal range, with a growing trend in recent years. Elevated uric acid levels are more frequently observed in individuals with obesity, sedentary lifestyles, and diets high in purines. Differences in prevalence are also noted between males and females, likely due to hormonal influences and metabolic differences. These findings highlight the importance of including uric acid measurement in routine preventive medical examinations. Population-level prevalence data help identify risk groups, allowing for timely interventions. Understanding the demographic, lifestyle, and nutritional factors contributing to hyperuricemia enables the design of targeted public health strategies. Early identification at the population level can prevent the future development of chronic kidney disease, hypertension, and cardiovascular disorders. Regular epidemiological monitoring provides insight into the impact of modern lifestyle habits on youth health. It also allows for forecasting long-term trends in the incidence of metabolic and renal disorders. Accurate prevalence data support clinicians and policymakers in planning educational and preventive programs for young populations. Overall, monitoring the frequency of elevated uric acid among youth is critical for public health and preventive medicine.

Detecting elevated uric acid levels in young individuals has important clinical and preventive implications. Early identification allows healthcare providers to recommend lifestyle modifications, including dietary adjustments, increased physical activity, weight management, and reduction of risk behaviors. Limiting intake of purine-rich foods, sugary drinks, and alcohol can directly lower uric acid concentrations. Regular physical activity improves renal perfusion, metabolic health, and helps manage body weight. Monitoring uric acid alongside renal function parameters, such as glomerular filtration rate, serum creatinine, and urea, provides a comprehensive assessment of early subclinical changes. Individualized recommendations can prevent the progression of metabolic disturbances and reduce the risk of chronic kidney disease, hyperuricemic nephropathy, and associated cardiovascular complications. Educational programs targeting youth on nutrition, physical activity, and healthy habits reinforce preventive measures. Routine uric acid screening as part of medical check-ups allows early identification of at-risk individuals and supports timely interventions. Public health strategies informed by prevalence and risk factor data can improve population-level health outcomes. Preventive management in youth reduces future healthcare burdens and promotes long-term

metabolic and renal health. Overall, integrating uric acid monitoring into routine assessments is an effective approach to preserving youth health and preventing chronic diseases later in life.

Conclusion

Hyperuricemia among young individuals is an increasingly important metabolic concern, even in the absence of overt clinical symptoms. Elevated serum uric acid levels can serve as an early marker of subclinical metabolic disturbances and potential kidney dysfunction. Monitoring uric acid, alongside renal function parameters, allows for the timely identification of at-risk youth and the implementation of preventive interventions. Lifestyle modifications, including dietary adjustments, increased physical activity, and weight management, can help mitigate the risk associated with elevated uric acid. Early detection and preventive strategies are crucial for reducing the future burden of chronic kidney disease and cardiovascular complications. Understanding the prevalence and influencing factors of hyperuricemia in young populations provides valuable insight for public health strategies and personalized healthcare recommendations, supporting long-term metabolic and renal health.

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