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POSTOPERATIVE COMPLICATIONS IN DISSEMINATED PERITONITIS AND FACTORS OF THEIR DEVELOPMENT

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Annotation.A retrospective analysis of the complication structure in 175 patients with peritonitis was performed depending on the method of surgical treatment. It was found that true laparostomy is accompanied by the maximum risk of wound edge retraction (71.4%), nosocomial infection (76.2%), and general complications. "Semi-open" staged sanitation of the abdominal cavity reduces the risk of purulent wound complications by 2.5–2.9 times (F = 0.025), acute respiratory failure — by 1.8 times (F = 0.277), moderately increasing the risk of nosocomial infection. "Semi-closed" treatment method is associated with a high risk of wound suppuration and respiratory failure.
Key words: *generalized peritonitis, postoperative complications, laparotomy, staged sanitation of the abdominal cavity.*

Relevance. Generalized peritonitis (GP) remains one of the most severe and life-threatening forms of acute surgical disease of the abdominal organs (1,3,5). It is characterized by a pronounced systemic inflammatory response, rapid progression to MOF and a high level of postoperative mortality, which still reaches 20-60% [1,2,5,9,11,15,16]. In 1976, Prof. W. Wagner wrote: "I and my generation of doctors were brought up in fear of God and peritonitis." According to Prof. V.N. Shamov, (1937): "The problem of peritonitis has not been solved by modern surgeons in many respects and continues to snatch one victim after another from surgical institutions" [2,4,6,8]. In the review article [1] it is noted that peritonitis, as one of the most formidable complications of many diseases and operations on abdominal organs, has occupied a leading place in the structure of surgical mortality for many years. According to published summary data, the average mortality rate is maintained at the level of 20-30%, reaching the highest figures (up to 50% and more) in postoperative peritonitis and peritonitis accompanied by the development of multi-organ life expectancy after abdominal sepsis is on average about 5 years. 8-10 years after seemingly successful treatment of widespread peritonitis complicated by sepsis, up to

82% of patients die [1,8,10,12]. Any operation, in essence, is additional programmed stress, negatively affecting the patient's body.

Existing methods for assessing the severity of the condition and prognosis (APACHE II, SOFA, MPI, etc.) are based mainly on clinical and laboratory parameters and do not take into account the patient's immunological profile [1,13,14]. Inclusion of immunological markers in the prognosis system allows for more accurate identification of risk patients and personalization of treatment tactics.

The problem of prognosis and prevention of postoperative complications in patients with generalized peritonitis requires an integrated approach, including the assessment of immunological markers, the development of prognostic models and scientifically based implementation of immunocorrection methods. This direction is relevant both from the point of view of fundamental scientific developments in the field of immunopathogenesis of critical conditions, and from the position of practical surgery aimed at reducing mortality and improving the quality of treatment.

Objective of the study. Development of predictors of postoperative complications of widespread peritonitis.

Material and methods. Of the total number of patients included in the control group (n = 58), 38 patients (65.5%) had some postoperative complications of RP in the POP. In the remaining 20 patients (34.5%), the course of POP can be characterized as relatively favorable, without the development of complications requiring additional intervention or intensive care.

Results and discussion. The most common were intra-abdominal abscesses and leaks, detected in 15 patients (39.5%). Such complications, as a rule, developed against the background of inadequate sanitation or ongoing persistence of infection in limited areas of the abdominal cavity. A 45-year-old woman, operated on for perforation of a sigmoid colon tumor, had a clinical picture of localized peritonitis with tension in the left iliac region on the 7th day. According to ultrasound data, an interintestinal abscess measuring 6×4 cm was detected, confirmed during a repeat laparotomy.

Early postoperative peritonitis within 72 hours after the intervention was diagnosed in 12 patients (31.6%). This type of complication is especially typical for patients admitted at late stages of inflammation and with pronounced microbial contamination. In a 26-year-old man who had previously suffered a stab wound with a penetrating injury to the jejunum, signs of intoxication and tachycardia increased during the first day after the operation, and during revision of the abdominal cavity, a relapse of purulent RP with abundant serous-purulent contents was confirmed. Suppuration of the postoperative wound occurred in 9 patients (23.7%). Most often, this complication was recorded in patients with obesity and diabetes. Thus, a 59-year-old woman with a BMI

of 38 kg/m² and chronic hyperglycemia against the background of ODC developed a wound infection on the 5th day after cholecystectomy, requiring opening and secondary intention.

Intestinal anastomotic leakage was recorded in 7 patients (18.4%), mainly after resection due to tumor or ischemic damage. In one case, a 72-year-old man after subtotal resection of the colon with the imposition of a colorectal anastomosis, on the 4th day, clinical RP with purulent discharge from the drains developed. During an emergency revision, leakage was confirmed, a repeated resection with the formation of a colostomy was performed.

Intra-abdominal bleeding was noted in 4 patients (10.5%), mainly in the first 24 hours after the intervention. A 67-year-old patient with liver cirrhosis and coagulopathy developed increasing hypotension and decreased hemoglobin after sanitation of purulent RP due to pancreatic necrosis 12 hours later. During relaparotomy, bleeding from the mesenteric vessel was detected, which was eliminated by suturing. Early adhesive intestinal obstruction was detected in 5 patients (13.2%) within 5 to 12 days after surgery. These patients were characterized by the presence of massive fibrinous effusion, multiple manipulations on the intestine and mesenteric edema. Thus, a 48-year-old patient after appendectomy due to phlegmonous appendicitis with abscess formation developed clinical symptoms of high intestinal obstruction on the 10th day, requiring adhesiolysis. Perforation of the remaining intestinal segment was detected in 3 patients (7.9%), mainly with unrecognized foci of ischemia or with a progressive tumor process. One of these cases was observed in a man with extensive OTMS, where the necrotic zone was not fully visualized at the first stage of the intervention. Eventration of intestinal loops was recorded in 2 cases (5.3%). Both patients had concomitant exhaustion, hypoalbuminemia, and anterior abdominal wall failure. In one case, eventration occurred during straining during coughing on the 6th day, requiring urgent repositioning and mesh plasty.

In the control group with complicated POP, only 102 systemic complications were registered, which amounted to an average of 2.68 complications per 1 patient, i.e. more than one and a half times higher than the number of peritoneal complications. At the same time, only 11 patients (28.9%) had the only systemic complication, and the remaining patients had 2-4 disorders, which emphasizes the pronounced systemic destabilization. The most common systemic complication was prolonged SIRS, which persisted for more than 72 hours, which was observed in 16 patients (42.1%). A 58-year-old man with fecal RP after perforation of a colon tumor against the background of the toxic phase of inflammation already on the 2nd day after the operation, fever up to 39.2 ° C, tachycardia, leukocytosis > 18 × 10^9 / l and pronounced CRP were

observed, despite adequate antibacterial therapy. The patient followed all recommendations, but systemic inflammation persisted for up to 6 days, which led to the development of nosocomial pneumonia. Hospital-acquired pneumonia was registered in 14 patients (36.8%). In most cases, it was lower lobe infiltrates that developed against the background of hypodynamia and impaired mucociliary clearance. A 65-year-old woman with musculoskeletal disorder and purulent RP, from the 4th day of PRP, had an increase in temperature, dyspnea, and X-ray data revealed infiltration of S7-S10 on the right. Despite adequate sanitation of the abdominal cavity, therapy with cefepime and moxifloxacin was required with gradual improvement. Nosocomial pneumonia was diagnosed in 12 patients (31.6%) and was, as a rule, the final stage of progressive systemic inflammation. A 61-year-old man with necrotizing pancreatic necrosis with RP developed a classic picture of MOF with impaired respiratory, renal, and cardiovascular function on the 5th day of POP, which required transfer to the ICU for appropriate therapy for 9 days.

Sepsis was diagnosed in 10 patients (26.3%), and in 8 of them (21.1%) in the form of TS. In 5 cases (13.2%), the clinical picture progressed to SS with the need for vasopressor support. In an elderly patient, after sanitation of RP against the background of ODC, SIRS persisted for 4 days, accompanied by hypotension, confusion, and impaired microperfusion. Despite complex therapy, the outcome was fatal.

ARF developed in 9 patients (23.7%), including one patient who had previously undergone surgery against the background of hypovolemia and anemia. Diuresis less than 500 ml/day, an increase in creatinine to 300 μmol/l and hyperkalemia required hemofiltration sessions.

Cardiovascular complications (decompensation of heart failure, atrial fibrillation attacks, ischemic episodes) were recorded in 5 patients (13.2%), mainly in older individuals with severe atherosclerosis. Thromboembolism was recorded in 6 patients (15.8%), including one case of massive embolism with a fatal outcome. A 70-year-old man with prolonged immobilization, against the background of a persistent inflammatory response, developed femoral vein thrombosis and subsequent deterioration of hemodynamics. Pleurisy and pleural empyema were observed in 4 patients (10.5%), mainly on the right. In one case, puncture and drainage of the pleural cavity was required. But neuropsychiatric disorders, including delirium, acute episodes of confusion, were observed in 6 patients (15.8%). The most typical case was a 64-year-old man, who on the 4th day of POP, against the background of hypoxia and toxicosis, showed disoriented behavior, motor agitation, which required sedation. Analysis of the clinical condition of patients in the dynamics of POP showed that on the 1st day, 20 patients (34.5%) were in the category of "no signs of complications".

All of them belonged to the subgroup of patients who underwent surgery without subsequent complicated course. On the contrary, in most patients with complicated course on the 1st day of POP, systemic and combined complications dominated, caused by severe SIRS, initial sepsis and MOF. Peritoneal complications were rarely recorded during this period. During this period, 2 patients died: one patient, 72 years old, admitted with fecal RP against the background of colon ischemia and severe cardiovascular failure, died of acute myocardial infarction 16 hours after surgery, the second case was a 67-year-old man operated on for perforation of a gastric ulcer, who developed SS against the background of initial CRF and decompensated diabetes. Despite adequate resuscitation support, the patient died within the first 24 hours.

By the 4th day of POP, the structure of complications shifted: peritoneal complications began to increase (intra-abdominal abscesses, early manifestations of suture failure). The number of patients without complications remained stable, but the first patients from among those with complications earlier began to join them (another 2 people improved clinically). The number of combined complications decreased to 20.7%. During this period, 3 more fatal outcomes were recorded: a 59-year-old man with purulent pancreatic necrosis developed massive pulmonary edema and pleurisy with respiratory failure on the 3rd day of POP, ending in cardiac arrest; a 66-year-old woman with initial HF FC III against the background of SIRS and TS developed MOF; a 43-year-old patient with severe ODC died of pulmonary embolism. By the 7th day of POP, the proportion of patients without signs of complications began to increase (to 43.1%). This was due to the gradual resolution of inflammatory manifestations in previously complicated patients. However, peritoneal complications increased and reached 9 cases (15.5%), which corresponded to the typical time frame for the formation of abscesses and leaks. Systemic complications decreased, but at this stage there was a peak in mortality - 5 deaths (8.6%): one patient with repeated early RP against the background of anastomotic failure, requiring relaparotomy, which he did not undergo; 2 patients died from decompensation of renal and respiratory functions against the background of TS; 1 case of development of pleural empyema in the POP with a breakthrough into the bronchial tree, causing aspiration syndrome; 1 patient, 68 years old, died from uncontrolled wound infection with SS. On the 10th day, the number of patients without complications increased to 30 people (51.7%), while 8 patients with peritoneal and 6 with extraperitoneal complications remained. Two more fatal outcomes were recorded: in the first case, the cause was late SS, in the second, cardiac decompensation with sudden asystole developed. By the 14th day, a favorable outcome was recorded in 35 patients (60.3%), that is, they had no signs of complications. Complications persisted in a minority (5 patients with peritoneal, 4 patients with extraperitoneal, 4 patients with

combined). During this period, 2 patients with combined complications died (progressive MOF in a patient with severe purulent pancreatic necrosis and the development of delirium and concomitant respiratory failure in a patient with a long course of TS). Overall, the mortality rate was 14 patients (24.1%), and all cases had a history of severe complications (TS, shock, MOF, respiratory or cardiac disorders). None of the patients who initially had no complications died, which underlines the reliable relationship between complications and outcomes.

The presented data demonstrate the structure and severity dynamics of the course of POP in patients with RP, who were treated according to the traditional algorithm. A special role is played by early systemic disorders occurring in the first 3-5 days, and late local complications developing on the 7-14th day. It is this combination of systemic and local lesions, together with high mortality. Analysis of the clinical picture in patients of the control group with RP showed a high frequency of postoperative complications (65.5%); one or more peritoneal and/or systemic complications were recorded. The most frequent peritoneal complications were intra-abdominal abscesses, recurrent RP, anastomotic failure and early adhesive intestinal obstruction. A characteristic feature of systemic complications was multiplicity and systemicity: POP, prolonged SIRS, hospital pneumonia, TS, thromboembolic and cardiac complications. On average, there were 1.5 peritoneal and 2.68 systemic complications per patient with complicated course. Dynamic observation showed that systemic complications developed mainly in the first 1-4 days of POP and were associated with early TS, SS, homeostasis disorder, while peritoneal complications formed within 5-10 days of POP, which corresponds to the phase of local inflammation and secondary infection. Mortality in the control group reached 24.1% (14 patients out of 58), and all fatal outcomes were noted among patients with complicated course of POP. Cumulative mortality increased by 7-10 days and was most often caused by SS, MOF and severe extraperitoneal infections. Patients who did not develop complications in POP survived completely, which emphasizes the prognostic significance of early control over systemic inflammation and formation of postoperative immune response.

CONCLUSIONS:

1. Analysis of the clinical picture in patients of the control group with RP showed a high frequency of postoperative complications (65.5%), one or more peritoneal and/or systemic complications were recorded. The most frequent peritoneal complications were intra-abdominal abscesses, recurrent RP, anastomotic failure and early adhesive intestinal obstruction.
2. Dynamic observation showed that systemic complications developed mainly in the first 1-4 days of POP and were associated with early TS, SS, homeostasis disorder,

while peritoneal complications formed within 5-10 days of POP, which corresponds to the phase of local inflammation and secondary infection

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