

**CLINICAL AND MORPHOLOGIC ANALYSIS OF PERITONITIS DEPENDING ON
THE PREVALENCE AND DURATION OF THE PROCESS****¹Raximov B.K., ²Rasulov X.A.**^{1,2}Toshkent Pediatriya Tibbiyot instituti<https://doi.org/10.5281/zenodo.8372326>

Abstract. *To analyze the methods and tactics of treatment, indications for surgery, its type and volume in peritonitis, as well as to give morphological characteristics of the peritoneum in patients with peritonitis.*

Materials and methods: the study was conducted in 1878 patients treated in the surgical department of the 4th City Clinical Hospital of Tashkent named after I. Irgashev during one calendar year, 2021.

Clinical, instrumental, biopsy and morphologic diagnostic methods were used in the study during operative and conservative treatment of peritonitis. The obtained results were processed and compared by statistical method.

Obtained results: the causes of peritonitis in the study group (124) were the following nosologic units : Acute appendicitis - 44%, perforated gastric and duodenal ulcer - 26%, pancreonecrosis - 6%, lesions of abdominal cavity and retroperitoneal organs - 9.6%, acute destructive cholecystitis - 6.4%, pinched hernia (postoperative, inguinal, femoral) - 3.2%, acute intestinal obstruction (adhesions, intestinal blockage) - 1.6%. Despite the large number of scientific studies devoted to this problem, it is very relevant to conduct research on the choice of tactics and methods of treatment in patients with acute peritonitis, indications for surgical intervention, its type and volume. The medical records of these 1878 patients (case histories and surgical logs) were also studied retrospectively.

Of these, 477 (25.4%) had acute appendicitis, 410 (21.8%) acute cholecystitis, 116 (6.2%) pancreatitis, 108 (5.8%) acute intestinal obstruction, 287 (15.3%) pinched hernia, 32 (1.7%) perforation of hollow organs, the remaining 448 (23.8%) peritonitis developed against the background of other surgical diseases: pancreatic tumor-1.6%, due to mesenteric vein thrombosis - in 1.6% of cases.

Interpretation of clinical and morphologic results allows to make a correct choice of method and tactics of treatment and reasonable pathogenetic approach. Conclusions: taking into account the clinical course of peritonitis, duration and prevalence of the inflammatory process, as well as the appropriate response of morphologic structures of the peritoneum, the choice of the method and volume of surgical intervention leads to an increase in the effectiveness of treatment.

Keywords: *acute peritonitis, surgical treatment, degranulation, mast cells.*

Since the cause of complications and high lethality in surgical interventions (diseases) is peritonitis, it is still very relevant. Lethality in spill peritonitis reaches 60%, on average 25-30%. In the terminal stage of peritonitis, this figure increases sharply and reaches 50-70%. In this case, an important role is played by surgical treatment.

In modern abdominal surgery, as a rule, some factors and their cause or their combination determine the indications for staged surgical treatment [3,5,6]. At the same time, various modern

detoxification methods have been proposed and used to remove toxins from the general bloodstream [3,8].

Of the total number of patients (1878), surgical intervention was performed in 1200 patients, and conservative treatment was performed in 678 patients. Complication with peritonitis was observed in 124 patients, which is 6.6%. 53% of patients had local peritonitis, and 47% had spilled peritonitis. Out of these 35.5% - 44 patients were females and 80 patients - 64.5% were males. The age of the patients ranged from 18 to 85 years. Of them, 18-30 years - 46 people; 31-40 years - 12; 41-50 years - 18; 51-60 years - 26; 61-85 years - 22 people.

Results and their discussion:

As a result of the research it was revealed that in the majority of patients peritonitis developed as a complication of the main nosologic disease, in particular: after acute appendicitis in 44%; perforated gastric and duodenal ulcer in 26%; pancreonecrosis in 6%; injury of abdominal cavity and retroperitoneal organs in 9.6%; acute destructive calculous cholecystitis - in 6.4%; pinched hernia (inguinal, femoral, postoperative) - in 3.2%; acute intestinal obstruction (adhesions, intestinal blockage) - in 1.6% and mesenteric thrombosis - in 1.6%. In general, the results of different tactics and treatment methods were analyzed. According to the chosen surgical tactics, all patients were divided into 2 groups:

1. patients with local or spilled peritonitis, in whom the tactics of semi-closed method of treatment was used. They underwent only one operation, during which the peritonitis focus was completely removed, the abdominal cavity was effectively cleaned and drained. The effectiveness of treatment in this group amounted to 100%.
2. The second group consisted of patients with spilled peritonitis treated by a semi-open method. This tactical option was chosen based on the following criteria: high bacterial contamination of the abdominal cavity, impossibility of complete elimination of the peritonitis focus and its accelerating factors, presence of multiorgan failure syndrome. Further, 24-36 hours after the primary operation, they underwent stage sanation-relaparotomy.

The effectiveness of treatment in this group depends on a number of factors: on the age of peritonitis development and time before surgery, on the severity of the initial condition of the patient, the size of the surgical wound, the effectiveness of resuscitation measures and methods of detoxification. The lethality in this group amounted to 14.5% (18 patients). In the next part of the study, morphologic analysis of intraoperatively obtained peritoneal fragments was performed.

On the preparations obtained from peritoneal biopsy at early stages of peritonitis, the mesothelial membrane protrusion was noticeable, indicating its thickening, and thin fibrin networks were detected on some preparations. In the deep layers, collagen and elastic fibers are thinned, and edema and bruising are seen between them (fibers).

The edematous fluid contains neutrophilic leukocytes. Venous vessels and capillaries are congested. There are migrating erythrocytes and leukocytes adhered to their walls. In the intima of arterioles there is a narrowing of the wall, due to swelling of endotheliocytes.

In protracted peritonitis, platelets also appear and thrombosis is observed. By this time, neutrophilic leukocytes in the form of cell populations go beyond the border of the

basal membrane and accumulate in the subendothelial space. In the field of view, some neutrophilic leukocytes show a state of degranulation in the form of exocytosis. In this case, the most characteristic sign was extravasation of neutrophilic leukocytes from the basal membrane. With the duration of peritonitis, morphologic changes also aggravated. Almost on all preparations the peritoneal surface was covered with thin rough fibrinous membrane. Microcirculation disorder was manifested as stasis in venules. Signs of edema were observed in all layers, and, mainly, it was expressed in the dense fibrous layer. Arterial vessel walls also underwent gross morphologic changes such as narrowing and numerous thrombi.

Lymphatic vessels on preparations are dilated, erythrocytes are also found in them. The accumulation of exudate in the peritoneal cavity and the increase in the cell population there indicate destruction - destruction of the vascular wall, which leads to the migration of plasma and blood formed elements, in particular neutrophilic leukocytes. Most of these cells are degranulated. Some preparations show macrophages (in small quantities) and dead cells of microorganisms.

In spillage peritonitis, fat drops, neutrophils and macrophages were often detected in the abdominal cavity, there was also observed narrowing of microvessels and accumulation of leukocytes along their wall (Fig.1.).

Neutrophilic leukocytes are concentrated mainly outside the basal membrane. The endothelium of most vessels shows areas of necrosis, and the surface of the peritoneum shows degranulated neutrophils, macrophages, fat droplets and cellular shadows (Fig. 2). These preparations also show total granulation of irregularly arranged collagen fibers and fibrinous clots, i.e., a network of coarse fibrinous strands. Degranulation of mast cells was also noted here (Fig. 3).

Thus, depending on the age and spread of peritonitis, morphologic changes in fibrous and cellular structures of the peritoneum are aggravated. In early terms between elastic and collagen fibers there are signs of swelling, and in late terms it is respectively replaced by hemorrhage, and then, disorganization of fibers and edema (Fig.4.). The dynamics of cellular changes begins directly with the accumulation of cells near the vessel walls, damage to the vascular endothelium and increased permeability of the basal membrane, which leads to subendothelial migration (Fig.5.), and further degranulation of neutrophilic leukocytes leads to an increase in the volume of inflammatory reaction (Fig.6.). Thus, the problem of effective treatment of spilled peritonitis remains very relevant today. In general, we emphasized the following ways to improve the results of peritonitis treatment:

1. Application of new minimally invasive methods of repeated sanitation of the abdominal cavity.

2. Development of express-methods of microbiological assessment of peritonitis etiology, identification of the dominant pathogen and development of methods of prognosis and dynamic exchange (4,7).

3. Study the possibility of prevention of intestinal anastomosis failure.

4. Correction of immunogenesis deficiency and systemic metabolic disorders by means of replacement therapy (5,8).

5. Conduct research on the development of enteral and nutritional mixtures capable of rapid digestion in the early postoperative period.

Conclusions: among the examined patients, the total number of patients with peritonitis was 124 (6.6%). Of them 53% had local peritonitis and 47% had spilled peritonitis. The most frequent cause of peritonitis was destructive appendicitis - 44%. At the same time, in the group with spilt peritonitis mortality was high and amounted to 14.5%.

It was noted that in peritonitis the aggravation of morphologic changes in fibrous-cell structures of the peritoneum depends on the duration and prevalence of the inflammatory process. At first there is edema in fibrous structures, then there is hemorrhage, and in the remote period there is disorderliness of fibers and edema. The dynamics of cell populations first leads to their accumulation in vessel walls, and then to destruction of vessel endothelium and subendothelial migration, which eventually leads to degranulation of neutrophilic leukocytes.

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