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Research Article

CLINICAL AND MORPHOLOGICAL ANALYSIS OF PERITONITIS DEPENDING ON ITS PREVALENCE AND DURATION

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Raximov B.K.
Tashkent City Clinical Hospital No. 4 Named After I. Irgashev, Uzbekistan

Rasulov H.A.
Tashkent Pediatric Medical Institute, Uzbekistan

ABSTRACT

Peritonitis is a severe complication of inflammatory and destructive diseases of the abdominal organs, with severe local and general symptoms, with the development of multiple organ failure. With widespread peritonitis, the mortality rate is 20-30%, and with the most severe forms this figure increases to 40-50%. Because of this, the topic of peritonitis is still on the agenda. The article presents a retrospective analysis of data from 1830 patients who were treated in the surgical department of the 4th Clinical Hospital named after. I. Irgashev in 2023. This scientific analysis focuses on the extent and effectiveness of surgical interventions selected based on the clinical course, duration and extent of peritonitis. At the same time, the article also studied the reaction of the morphological structures of the peritoneum in accordance with the duration and spread of the inflammatory process during peritonitis.

KEYWORDS

diffuse peritonitis, surgical treatment, mast cell degranulation.

INTRODUCTION

Peritonitis remains a pressing problem in emergency surgery to this day. The reason is that it often occurs as a complication of surgical diseases, and the mortality rate for this pathology remains high. With diffuse forms of peritonitis, mortality reaches 55-60%, and the average rate is estimated at 25-30%. In the terminal stage, mortality increases to 50-70% [2, 9, 10].

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Surgical treatment plays a key role in the treatment of peritonitis. In modern abdominal surgery, as a rule, indications for staged surgical treatment are determined by individual factors or their complex [4, 5, 7]. Modern detoxification methods have also been quite proposed, which are used to remove toxins from the general bloodstream [3, 10]. Despite the large number of scientific studies devoted to this problem, it is very important to conduct research on the number of cases of acute peritonitis in patients, the choice of tactics and methods of treatment, indications for surgery, its type, size and description. and monitoring of morphological processes occurring in the peritoneum during this pathology.

Purpose. Analysis of treatment tactics, methods, indications for surgical intervention, type of surgery, size and morphological changes of the peritoneum in patients with peritonitis.

Material and methods. The study was carried out in 2023 on 1,830 patients who were treated in the surgical department of the 4th clinical hospital in Tashkent. The work used morphological, clinical, instrumental studies, surgical and conservative treatment, and methods of statistical analysis.

The medical records of 1830 patients treated with surgery were retrospectively reviewed in the Surgical Journal (Table 1). Of these, 488 (26.7%) had acute appendicitis, 452 (24.7%) patients had acute cholecystitis, 90 (4.9%) had pancreatitis, 121 (6.6%) had acute intestinal obstruction , 122 (6.7%) had compressed intestinal obstruction. hernia, 44 (2.4%) patients suffered from perforating organs, and the remaining 513 (28%) patients suffered from other surgical diseases. 1190 (65%) of these patients underwent surgery, and 640 (35%) were treated conservatively.

Table 1.

The composition of the total patients (n=1830)

№	Diagnosis	Number	In percentages
1	Acute appendicitis	488	26.7%
2	Acute cholecystitis	452	24.7%
3	Acute pancreatitis and pancreonecrosis	90	4.9%
4	Acute intestinal obstruction	121	6.6%
5	Compressed hernia	122	6.7%
6	Poplar organ perforation	44	2.4%
7	Other diseases	513	28%
	Total	1830	100%

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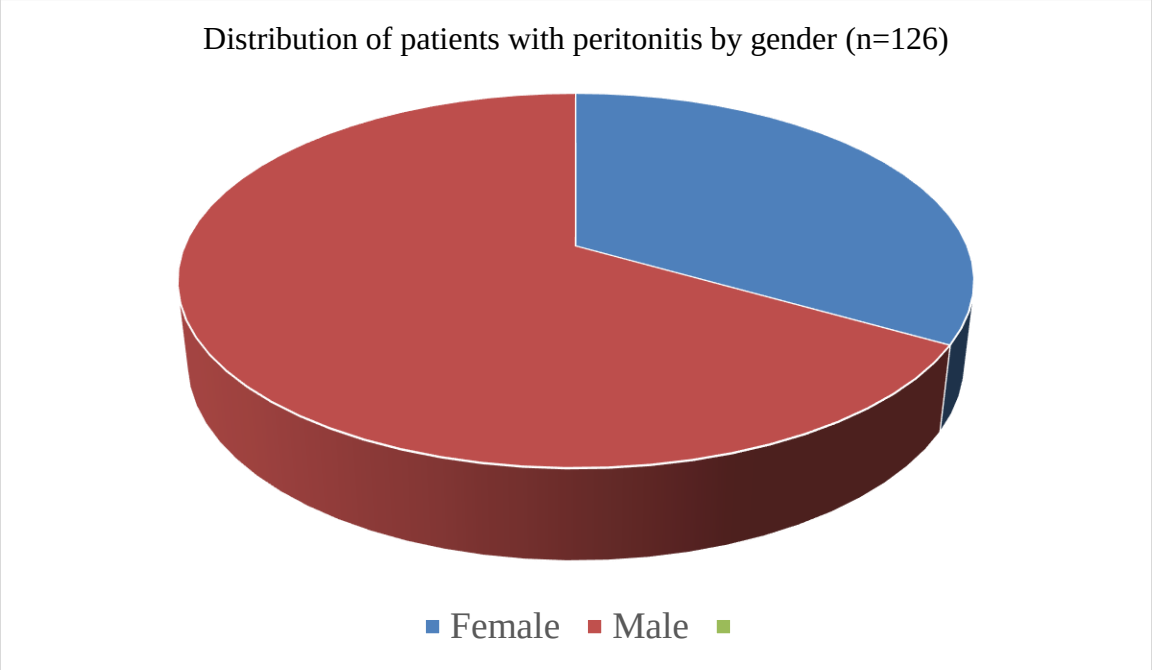

Diagram 1

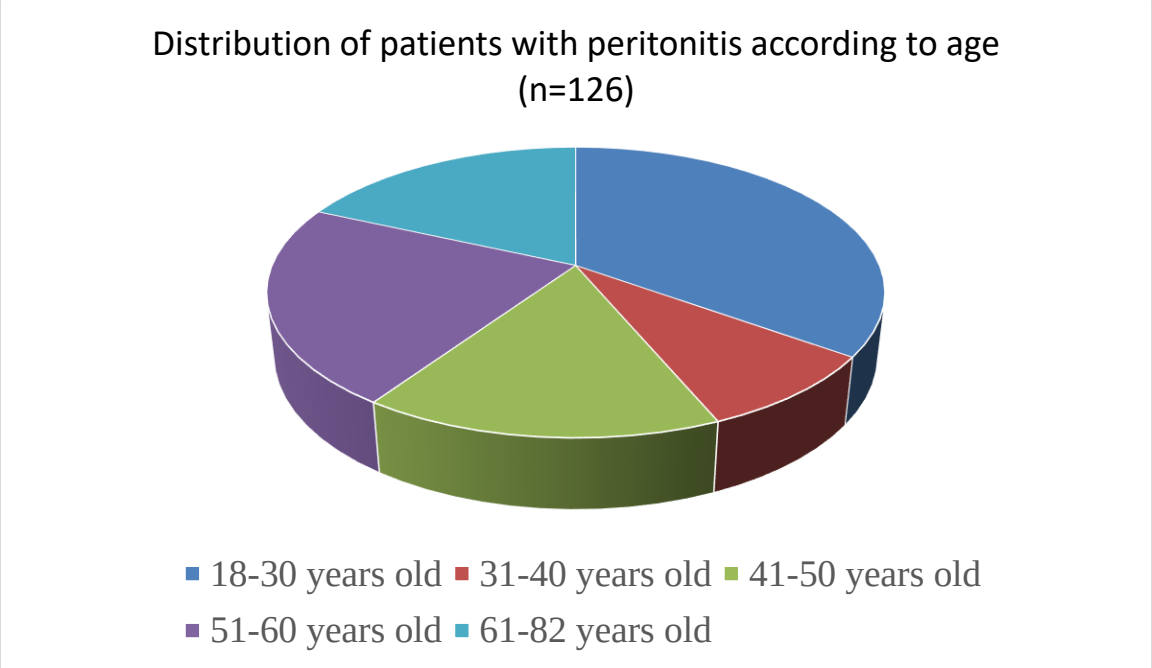

Diagram 2

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The number of patients suffering from peritonitis was 126 (6.9%). 61% of them - local peritonitis, 39% - disseminated peritonitis. 33.3% (42) of patients with peritonitis were women, and 66.7% (84 patients) were men (Chart 1). The age of patients was observed from 18 to 82 years (18-30 years - 44; 31-40 years - 11; 41-50 years - 20; 51-60 years - 28; 61-82 years - 23 patients) - diagram 2.

RESULTS AND DISCUSSION

In the examined patients, it was found that peritonitis was often complicated by underlying nasal diseases: acute appendicitis - 43.6%; perforated ulcer of the stomach and duodenum - 34.9%; pancreatic necrosis - 2.4%; damage to the abdominal cavity and retroperitoneal organs - 3.2%; Acute cholecystitis (acute phlegmonous-stone cholecystitis, choledocholithiasis, gallbladder empyema) - 3.9%; compressed hernia (femoral, femoral, postoperative) - 3.2%; acute intestinal obstruction (adhesion, intestinal volvulus) - 2.4%; pancreatic tumor - 0.8%; thrombosis of mesenteric vessels - 2.4%; primary bacterial peritonitis (ascites-peritonitis) – 3.2%. The results of treatment of various forms of peritonitis were also analyzed. Depending on the chosen surgical tactics, the patients were divided into two groups:

1. Patients with diffuse and widespread peritonitis were treated using a semi-closed method (80 people). They performed one operation, during which the focus of peritonitis was completely removed, and the abdominal cavity was effectively cleaned and drained. The treatment effect in this group was 100%.

2. The second group consisted of patients with generalized peritonitis (46 people) who were treated semi-openly. This option of tactics was chosen based on the following criteria: high bacterial contamination of the abdominal cavity, the impossibility of completely eliminating the source of peritonitis or its accelerating factors, the presence of multiple organ failure syndrome. 24-36 hours after the primary operation, staged sanitary relaparotomy was performed. The effectiveness of treatment in this group depended on a number of factors: the period of development of peritonitis and the period before surgery, the initial severity of the patient's condition, the size of the surgical wound, the effectiveness of resuscitation measures and detoxification methods. Mortality in this group was 21.7% (10 patients).

At the next stage of scientific research, the morphological characteristics of the peritoneal sections obtained during the operation were studied and analyzed (Fig. 1 and 2).

In preparations prepared from peritoneal biopsies, in the early stages of peritoneal inflammation, protrusion on the surface of the mesothelial membrane indicates its swelling; in some preparations, thin fibrin networks are found. In the deep layers of the peritoneum,

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thinning of collagen and elastic fibers, swelling and hematomas between them were revealed. The swelling fluid contains neutrophils. Venous vessels and capillaries fill, red blood cells adhere to the walls, and white blood cells migrate.

The narrowing of their walls is determined by swelling of the endothelial cells of the inner layer of arterioles. If peritonitis lasts for a long time, platelets also appear in the arterioles and thrombosis is observed. During these periods, it is determined that neutrophil leukocytes in the form of a cell population extend beyond the basement membrane and accumulate in the subendothelial region.

Neutrophils in some fields of view also showed degranulation in the form of exocytosis. One of the defining features was the extravasation of neutrophils from the basement membrane.

The longer the inflammation of the peritoneum lasted, the more profound the morphological changes were observed. It was found that in almost all preparations in this case, the surface of the peritoneum was covered with a thin and rough fibrin membrane. The observed stasis in the venules indicates a violation of microcirculation. Signs of edema are observed in all layers of the peritoneum, and it is predominantly more clearly expressed in the dense fibrous layer. Gross morphological changes were also revealed in the walls of arterial vessels: significant narrowings, including blood clots everywhere. The examinations also revealed that the lymphatic vessels of the peritoneum were dilated and red blood cells were found in them. The accumulation of exudate in the abdominal cavity and a large population of cells in it indicates a violation of the structure of the vascular wall and indicates the migration of serum and even formed elements, including neutrophils. We see that most of these cells are degranulated. A small number of macrophages and dead microbes were found in some preparations.

With diffuse types of peritonitis, neutrophils and macrophages, as well as fat drops, are found in the abdominal cavity in most cases. In such preparations, narrowing of microvessels and accumulation of leukocytes around the wall are also expressed. We see that neutrophils are concentrated almost outside the basement membrane. In the endothelial layer of most vessels, areas of necrosis are detected; degranulated neutrophils, macrophages, fat droplets, and cell shadows are visible on the surface of the peritoneum. In these preparations we can see total granulation, random arrangement and swelling of collagen fibers, fibrinous coagulation in the peritoneum - a network of coarse fibrin strands is formed. They also experienced degranulation of fat cells.

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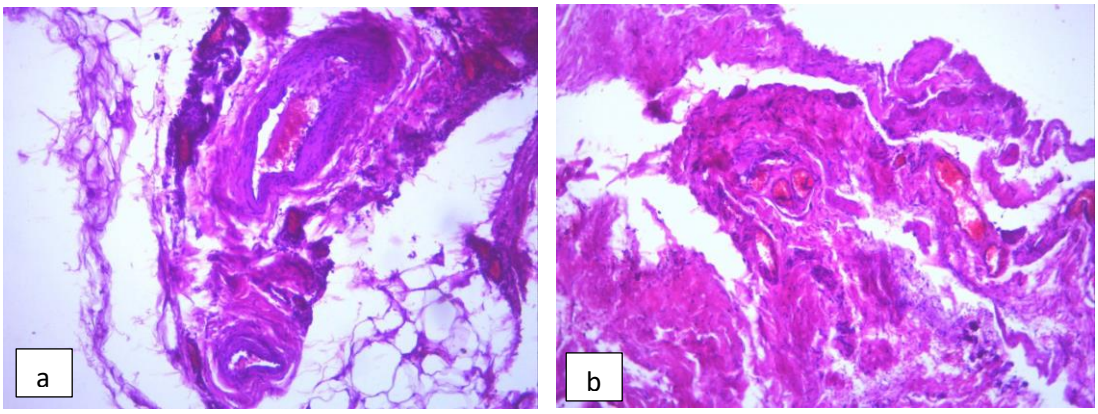
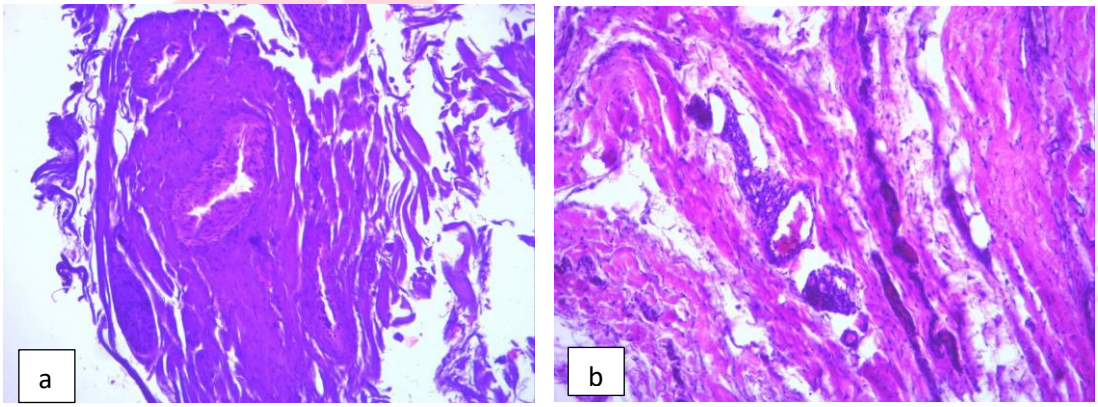


Picture. 1- (a, b). Stasis in the venules, microcirculation disturbances, signs of edema, a dense fibrous bottom of the vessels are observed, GE., K.400.



Picture. 2 (a, b) Degranulated neutrophilic leukocytes, macrophages, fat droplets, as well as cell shadows are visible, GE., K.400.

Thus, depending on the duration and extent of peritonitis, the morphological changes in the fibrous and cellular structures of the peritoneum deepen. In the early stages, there are signs of edema between the elastic and collagen fibers, in the later stages - hemorrhages, and then a change in the order of the fibers and a change in the direction of the edema are observed. The dynamics of changes in cells begin with their accumulation towards the walls of blood vessels, damage to endothelial cells leads to subendothelial migration as a result of increased permeability of the basement membrane, and then degranulation of neutrophils causes an increase in the coverage of the inflammatory response.

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Henceforth, the problem of effective treatment of widespread peritonitis remains relevant. Today we give preference to the following ways to improve the results of treatment of generalized peritonitis: 1. Wider use of new, less invasive methods of reabdominal cleansing for generalized peritonitis [1]. 2. Development of express methods for determining the dominant microbial pathogen of peritonitis and predicting their changes over time [4, 7, 10]. 3. To study methods for preventing the failure of intestinal anastomoses performed against the background of peritonitis and without it. 4. Monitor immunodeficiency and systemic metabolic disorders using replacement therapy [10]. 5. Continue more intensive research on the development of enteral nutritional mixtures that can be absorbed by the body of patients in the early postoperative periods.

CONCLUSIONS

Among the patients examined in this study, the total number of patients with peritonitis was 126 (6.9%), of which 61% had diffuse peritonitis and 39% had widespread peritonitis. The most common cause of peritonitis was destructive appendicitis - 43.6%. In the group with widespread peritonitis, mortality was high - 21.7%.

The deepening of the morphological changes in the fibrous and cellular structures of the peritoneum directly depends on the duration and spread of the inflammatory process during peritonitis. First of all, swelling of the fibrous structures occurs, and then bleeding, and in the long term, disorganization of the fibers and swelling are observed.

The dynamics of the cell population are such that they first accumulate towards the vessel walls, causing subendothelial migration as a result of endothelial dysfunction and, finally, degranulation of neutrophil leukocytes.

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