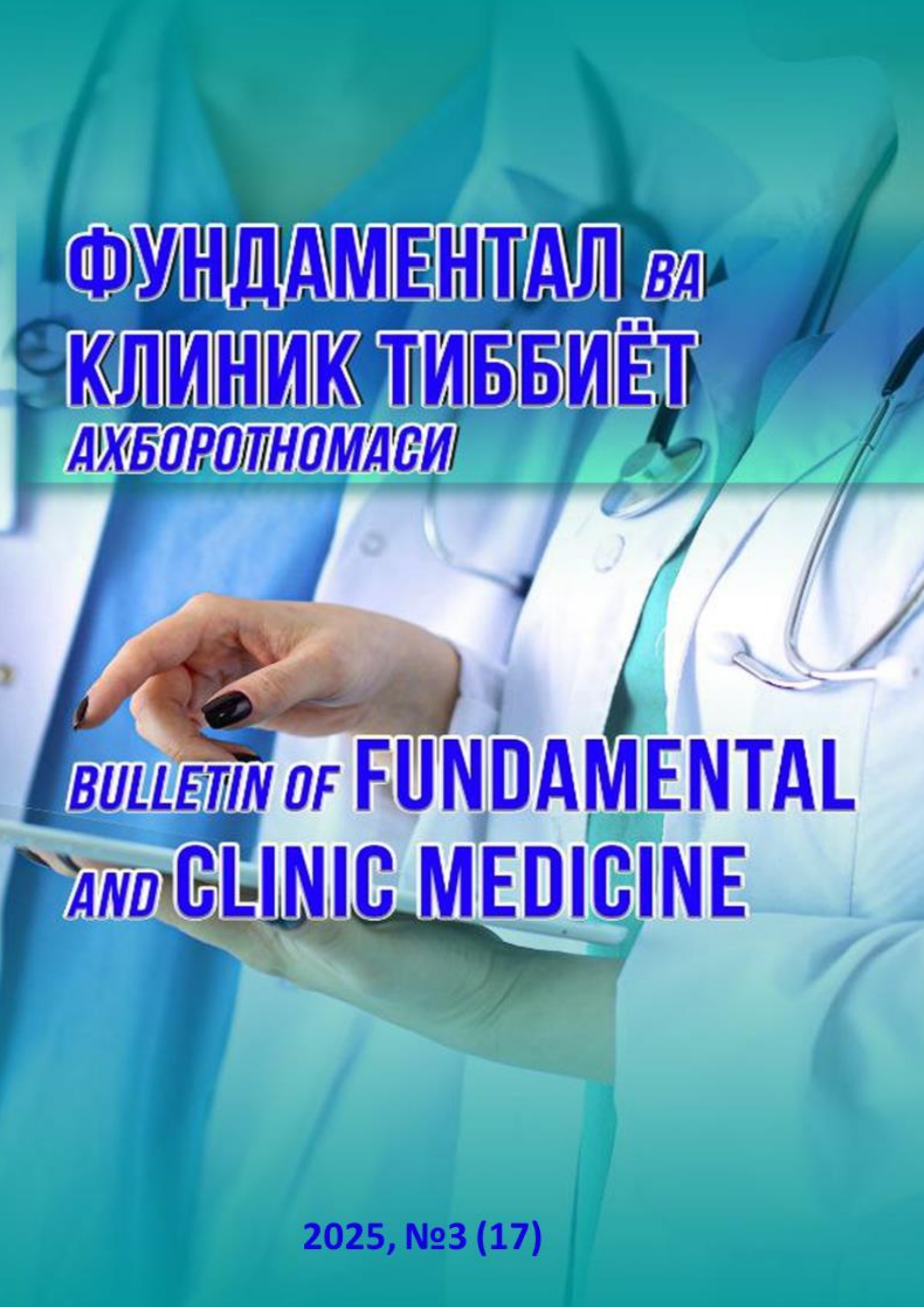

ФУНДАМЕНТАЛ ВА КЛИНИК ТИББИЁТ АХБОРОТНОМАСИ

BULLETIN OF FUNDAMENTAL AND CLINIC MEDICINE

2025, №3 (17)

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РЕСПУБЛИКИ УЗБЕКИСТАН

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МУНДАРИЖА // СОДЕРЖАНИЕ // CONTENTS

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INTESTINAL INTUBATION IN PERITONITIS

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Resume. *37 history of patients with peritonitis with antegrade intubation of small intestine (24), with retrograde intubation of small intestine — 11(from appendicocaecostomy — 9, from ileostomy — 2), with combine intubation (in first operation — antegrade, in second-retrograde) — 2 — were analyzed. According to Manhaim peritonitis index I degree (< 20) — in 15 patient, lethality 13,5 %; II degree (21–29) — in 14 patient, lethality 42,8 %; III degree (3–47) — in 8 patient, lethality 50 %.*

Keywords: *peritonitis, intestinal intubation.*

ПЕРИТОНИТДА ИЧАКЛАРНИНГ ИНТУБАЦИЯСИНИ ҚЎЛЛАНИЛИШИ

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Резюме*. Перитонит билан касалланган 37 нафар беморнинг касаллик тарихи таҳлил қилинди: ингичка ичакнинг антеград интубацияси билан (24 та), ретроград интубацияси билан - 11 та (аппендико-тсеокостомия орқали - 9 та, илеостомия орқали - 2 та), комбинацияланган интубация билан (биринчи операцияда - антеград, иккинчисида - ретроград) - 2 та. Мангейм перитонит индекси бўйича: И даража (< 20 балл) 15 беморда кузатилган, ўлим 2 та (13,3%); ИИ даража (21-29 балл) - 14 беморда кузатилган, ўлим 6 та (42,8%); ИИИ даража (30-47) - 8 бемордан 4 таси ўлди (50%).*

Калит сўзлар: *перитонит, ичак интубацияси.*

ПРИМЕНЕНИЕ ИНТЕСТИНАЛЬНОЙ ИНТУБАЦИИ В ХИРУРГИИ ПЕРИТОНИТА

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Резюме. *Проведен анализ историй 37 больных перитонитом. Интубация тонкой кишки проводилась антеградно у 24 (транс-назально - 23, через рот - 1), ретроградно - у 11 (через аппендико-цекостому - 9, через илеостому - 2), комбинировано (при первой операции трансназально, при релапаротомии - трансце-кально) - 2. Согласно шкале Мангеймского индекса перитонита 1 степень (< 20 баллов) отмечена у 15, умерло 2 (13,3 %); 2 степень (21-29 баллов) - у 14, умерло 6 (42,8 %); 3 степень (30-47 баллов) - у 8, умерло 4 (50 %).*

Ключевые слова: *перитонит, интестинальная интубация.*

Introduction. Purulent peritonitis, especially when widespread, is accompanied by dynamic intestinal obstruction of the gastrointestinal tract (GIT), with intoxication and often multiple organ failure (MOF). In the overstretched intestinal wall—primarily the small intestine—due to mechanical compression of the neuromuscular apparatus, severe microcirculation disorders, and intoxication, significant macro- and microstructural changes occur: the thickness of the muscular layer decreases by one-third; the mucosa with villi becomes significantly thinner, exhibiting necrobiotic changes; blood vessels are engorged with blood and surrounded by perivascular edema; lymphoid infiltration develops in all layers of the wall along with dystrophic changes in the cells of Meissner's and Auerbach's plexuses [1, 2, 5, 8]. This leads to the loss of barrier and protective functions.

Distal colonization of the intestine by pathogenic flora begins and progresses, which then penetrates the peritoneal cavity through the intestinal wall. An overstretched intestine filled with contents becomes an “undrained purulent cavity,” and thus a persistent reservoir of infection and endotoxemia—playing a central role in MOF development [12, 15]. Therefore, until this issue is resolved, intestinal motility cannot be restored [8].

In cases of purulent widespread, especially generalized, peritonitis, small intestine intubation is considered one of the key and even mandatory stages of complex treatment [9, 10, 13]. The intubation tube performs several functions, primarily decompression and splinting [9, 10, 14].

In the early postoperative period, i.e., in the first few days, drainage and decompression of the GIT are absolutely necessary. The highly toxic contents accumulating in the dilated small intestine are removed through the tube, which reduces endogenous intoxication; intestinal hypertension and intra-abdominal pressure are lowered and eliminated, significantly improving microcirculation and lymphatic drainage in the intestinal wall and abdominal organs; intestinal peristalsis and the barrier function of the intestinal wall improve; its permeability to toxins and microbial flora decreases; and the risk of suture failure at the repaired bowel defect or anastomosis is minimized.

The tube also facilitates intestinal lavage, early enteral feeding, and restoration of motor-evacuatory and all other intestinal functions. In advanced peritonitis, especially due to failure of an inter-intestinal anastomosis, the method of double drainage of the small intestine is considered most effective [10]: antegrade nasogastric and retrograde via ileostomy intubation. The retrograde tube drains the largest volume (up to 5–6 liters) of intestinal contents in the first 4–5 days, which is the main advantage of retrograde intubation.

Many researchers emphasize that in widespread purulent peritonitis, it is extremely important to consider the patient's age, general condition, and the phase of peritonitis. In patients over 60 with comorbid pulmonary and/or cardiovascular diseases in moderate condition (phase 2–3 peritonitis), and when prolonged intestinal intubation is required, retrograde transanal intubation is indicated.

It is also necessary to know the genesis and localization of the inflammatory process. If the source of peritonitis is in the proximal abdominal cavity, then—if there are no contraindications—transnasal intubation of the small intestine is most appropriate. However, when the pathological process is closer to the ileocecal segment, retrograde intubation is necessary.

Purpose of the study: To study the course of peritonitis depending on the method of intestinal intubation.

Materials and methods. An analysis was conducted on the medical records of 37 patients with peritonitis treated at the Bukhara branch of the Republican Center for Emergency Medical Care, in whose comprehensive treatment intestinal intubation was used. There were 9 women and 28 men, aged from 20 to 84 years (over 60 years – 18 patients or 48.6%). The types of peritonitis were: inflammatory in 4, traumatic in 6, perforative in 12 (perforation of the small intestine – 1, diverticulum – 1, duodenal ulcer – 3, of a suprastenotically dilated large intestine – 5, or due to a tumor – 2), postoperative – in 5, gangrenous-necrotic – in 5, and enzymatic – in 5.

The severity of peritonitis, like in other studies [14, 16], was assessed using the Mannheim Peritonitis Index (MPI). Based on the MPI, the 37 patients were distributed as follows: Grade 1 (< 20 points) – 15 patients (40.5%), with 2 deaths (13.3%); Grade 2 (21–29 points) – 14 patients (37.8%), with 6 deaths (42.8%); - Grade 3 (30–47 points) – 8 patients (21.6%), with 4 deaths (50%).

An abdominal index (AI) of 13 points or higher was recorded in 18 patients (48.6%).

Results and Discussion. Our modest experience indicates that although the MPI scale is very easy to use, it is not entirely adequate.

Example: A 57-year-old patient was hospitalized in the intensive care and resuscitation unit three days after the onset of the disease with generalized peritonitis in the terminal phase (septic shock grade III, blood pressure 70/0, creatinine 203.5 μmol/L). After intensive preparation, laparotomy was performed. There was 3500.0 mL of pus with fibrin in the abdominal cavity. A perforated duodenal ulcer was found and excised using the Judd technique. After thorough sanitation of the abdominal cavity, transnasal intubation of the small intestine was performed up to the ileocecal angle. To prevent compartment syndrome and to perform a repeat sanitation of the abdominal cavity the next day, the operation was completed with a laparostomy. However, the patient died 23 hours after the operation from multiple organ failure.

In this case, the patient was critically ill, but the MPI score was only 28 (grade 2), highlighting the limitations of the MPI scale.

According to the classification of peritonitis used in our study, diagnoses were: Localized peritonitis in 3 patients (walled-off – 1, non-walled-off – 2), widespread peritonitis in 34 patients (diffusely spread – 13, generalized – 21).

Phases of peritonitis: reactive (compensated) – 5, toxic (subcompensated) – 23, terminal (decompensated) – 9.

Morphologically, the types of peritonitis identified were: serous – 1, serous-fibrinous – 7, serous-hemorrhagic – 4, hemorrhagic – 2, urinous – 1, fibrinous-purulent – 7, purulent – 9, fecaloid – 6.

Surgical interventions performed: small intestine – 12 patients (4 deaths), large intestine – 5 patients (3 deaths), both small and large intestines – 4, stomach and duodenum – 4 (1 death), pancreas – 6 (1 death), small and large intestines, spleen, kidney – 1 (1 death), stomach, small intestine, and mesocolon – 1 (1

death), large intestine and kidney – 1, urinary bladder – 1 (1 death), appendectomy – 1 and abdominal cavity drainage – 1.

Methods of intestinal intubation: antegrade – in 24 patients (transnasal in 23 [6 deaths], orally in 1), retrograde – in 11 patients (via appendicocecostomy in 9 [4 deaths], via jejunostomy in 2), combined (first operation – transnasal, relaparotomy – transcecal) – in 2 patients.

Depth of tube placement: antegrade – to the cecum in 16, to the ascending colon in 12; retrograde – to the duodenojejunal flexure in 8. In combined drainage: antegrade – to the proximal half of the small intestine, retrograde – up to the duodenum.

If the distal half of the small intestine was mainly dilated, with thickened edematous walls, non-peristaltic and containing a significant amount of sequestered fluid, we preferred retrograde intubation through an appendicocecostomy.

Although naso-intestinal intubation is most commonly used, it cannot be considered optimal. The single-lumen silicone intubation tube with an external diameter of 8.0 mm does not always provide adequate decompression of the small intestine: first, it is too short (typically 2.5 meters), and the terminal part of the small intestine is prematurely deintubated. Second, the chyme does not drain sufficiently in the proximal (antiperistaltic) direction. Duration of intestinal intubation ranged from 2 hours (retrograde intubation via appendicocecostomy during relaparotomy for urinary peritonitis due to suture failure on day 4 after bladder rupture repair; the patient died 2 hours after surgery from cardiovascular failure) to 10 days, averaging 7 days. Already during surgery, intestinal contents were removed through the tube, and repeated lavage was performed.

Postoperative enteral lavage was continued for decompression and to reduce intoxication. Infusion, detoxification, antibacterial, and immunocorrective therapy was administered. With the return of peristalsis, enteral feeding via the tube was initiated using amino acid mixtures to prevent or promptly manage intestinal failure syndrome.

Criteria for terminating intestinal decompression: reduction of fluid output through the tube to 500 ml/day, reduction in abdominal bloating, appearance of stable intestinal peristalsis, passage of gas and independent bowel movements.

In cases of widespread peritonitis, the optimal duration of intestinal intubation was studied [3]. It was found that, due to trans-tubal detoxification (intestinal lavage with saline, enteral dialysis with 2% sodium chloride solution, and enteral sorption with Enterosgel), the toxicity level of intestinal contents normalizes only by the 4th day. Therefore, from day 5 onward, the tube serves a structural (supporting) function, and is left in place for an additional 3–5 days.

Among the 12 deceased patients, transnasal intestinal intubation was performed in 6 (of whom 3 had their procedure concluded with laparostomy), transcecal intubation in 5, and via ileostomy in 1 patient. In patients with advanced peritonitis, where a single, even the most thorough, abdominal cavity sanitation could not be definitive, the intervention was completed with a laparostomy (5 patients) or planned programmed relaparotomies (3 patients).

Although relaparotomies complicate the course of acute diffuse peritonitis [8], adequate re-sanitations of the abdominal cavity are life-saving, as they reduce mortality from multiple organ failure.

Out of 37 patients with peritonitis, 12 died (32.4%), including 6 within the first 3 days—3 of them within the first 24 hours after the intervention. Causes of death: intoxication: 9 patients, acute cardiovascular failure: 2 patients, pulmonary artery thromboembolism: 1 patient. To facilitate tube removal, patients were given a spoonful of sea buckthorn oil to drink and 20–25 ml of it was introduced into the small intestine via the tube. The tube was then removed using slow upward and downward movements. No complications of intestinal intubation were noted.

Conclusions. In the treatment of patients with peritonitis—particularly advanced cases—intestinal intubation must be included in the comprehensive treatment plan.

It is advisable to be guided by the location of the source of the inflammatory process: for sources in the upper gastrointestinal tract and with maximal changes in the proximal small intestine, antegrade intestinal intubation is appropriate. If the source of peritonitis is in the lower abdominal cavity and the most significant changes are in the distal small intestine, retrograde intubation is necessary.

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