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Improving the complex surgical treatment of acute purulent cholangitis in gallstone disease.

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Abstract: Acute purulent cholangitis (APC) is one of the most severe and life-threatening complications of biliary tract diseases, which is an acute inflammation of the bile ducts that occurs against the background of a persistent disturbance in the outflow of bile. The leading cause of impaired bile outflow is cholelithiasis (GSD).

Key words: papillosphincterotomy, *navigational surgery*, cholangiostomy.

Acute purulent cholangitis (APC) is one of the most severe and life-threatening complications of biliary tract diseases, which is an acute inflammation of the bile ducts that occurs against the background of a persistent disturbance in the outflow of bile. The leading cause of impaired bile outflow is cholelithiasis (GSD) [2, 3, 10].

The continuing interest in cholangitis is largely determined by the unsatisfactory results of treatment over the past 20 years, which is confirmed by high mortality rates - from 11% to 64%, even with timely surgical operations. At the same time, the highest percentage of deaths is caused by emergency operations when combined with acute destructive cholecystitis and peritonitis due to the extreme severity of the operated patients [5,9,11]. It is believed that without surgical resolution, acute purulent cholangitis leads to death in 100% of cases [6, 10].

As a rule, surgical treatment of patients with severe forms of purulent cholangitis is carried out in 2 stages. The first stage is decompression of the bile ducts using minimally invasive methods - endoscopic papillosphincterotomy or percutaneous cholangiostomy. As a second stage, patients undergo laparoscopic cholecystectomy (LCE) or cholecystectomy through a mini-access with external drainage of the common bile duct. At the same time, up to 55% of patients require simultaneous open operations due to the presence of destructive cholecystitis or peritonitis [1,4, 7,12].

Dissatisfaction with the results of treatment of purulent cholangitis, associated with the development of biliary sepsis in 6.5-30% of patients, dictates the need to optimize the tactical and technical aspects of complex surgical treatment of this pathology. Progress in this area is possible with the combined use of minimally invasive surgeries with transdrainage intrabiliary procedures for sanitizing the bile ducts, preventing the formation of cholangiogenic abscesses in the liver and septic conditions.

Purpose of the research. To improve the results of treatment of patients with acute gastrointestinal tract disease by optimizing the tactical and technical aspects of complex surgical treatment.

Materials and methods. 2010-2019. In the surgical departments of the clinic of the Samarkand

Medical Institute, 144 patients with acute gastrointestinal tract disease that developed as a complication of cholelithiasis were operated on. The age of the patients ranged from 28 to 81 years, with an average of 53+13 years. Men - 53 (36.8%), women - 91 (63.2%).

ACH as a complication of cholelithiasis developed as a result of choledocholithiasis and chronic calculous cholecystitis in 82 (56.9%), acute calculous cholecystitis and choledocholithiasis in 62 (43.1%) patients, and acute destructive cholecystitis was complicated by various forms of peritonitis in 29 patients (spread - 7 , local-22).

Concomitant pathology was identified in 97 (67.3%) patients, predominantly cardiovascular diseases in 59 (40.9%), chronic obstructive pulmonary diseases in 2 (14.5%), obesity in 48 (33.3%), diabetes mellitus in 12 (8.3%).

Diagnosis of WHC was carried out on the basis of the clinical picture (Charcot triad, Reynolds pentad), laboratory and instrumental research methods (sonography, RPCG, MRI cholangiography). The final diagnosis was made by characteristic changes in the walls of the bile ducts and bile with the determination of microflora.

Results and discussion. All patients were divided into 2 groups. The comparison group consisted of 61 (42.4%) patients operated on in the clinic from 2010 to 2014, the main group was 83 (57.6%) who were treated in 2015-2019. In the main group of patients, treatment was carried out taking into account the severity of AHC, proposed at the consensus conference in Tokyo (2006). In accordance with these criteria, mild severity of acute hyperthyroidism was found in 54 (65%), moderate in 18 (21.6%), severe in 11 (13.2%) patients.

Patients with acute chronic hepatitis were subjected to various minimally invasive and open surgical interventions, taking into account the proposed severity criteria, as well as the presence of a clinical picture of acute destructive cholecystitis and peritonitis.

In the main group of patients with moderate severity (n = 18) and severe severity of acute gastrointestinal tract (n = 11), the first stage of treatment for 20 patients underwent minimally invasive decompressive interventions. At the same time, 9 patients with acute destructive cholecystitis underwent decompression of the gallbladder through percutaneous transhepatic microcholecystostomy (PTMCS) under ultrasound control. Then, 5 of them underwent endoscopic papillosphincterotomy (EPST) and nasobiliary drainage (NBD). In the remaining 4 patients, PPMC significantly relieved the clinical manifestations of WHC. In 11 patients with acute cholecystitis without a clinical picture of acute cholecystitis, the first stage was endoscopic transduodenal intervention - EPST with lithoextraction and NBD of the common bile duct. The second stage in these 20 patients, on days 7-12, was cholecystectomy - LCE-13, MLCE-7, while in 4 cases MLCE was supplemented with choledocholithotomy.

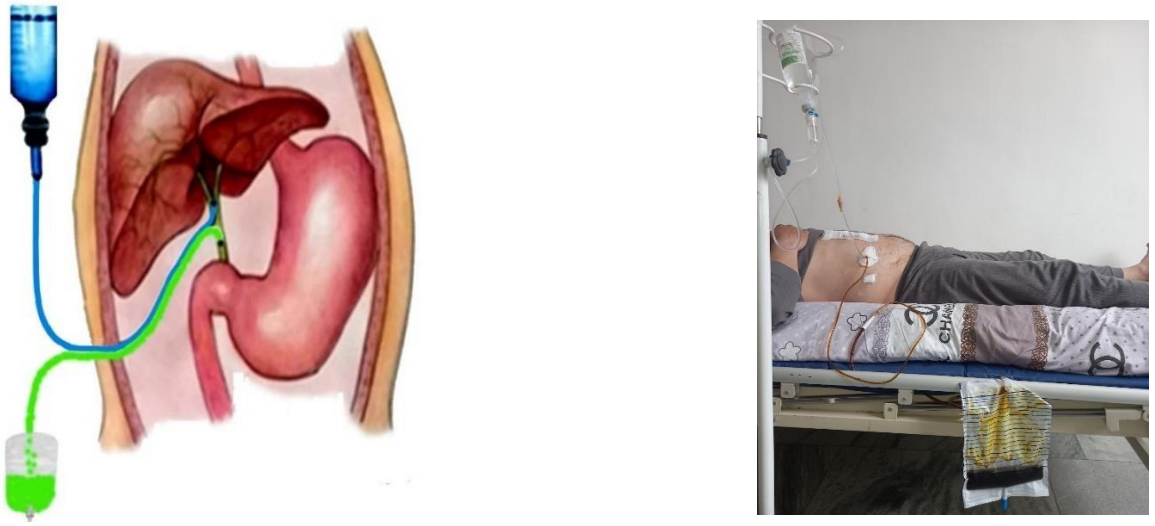
In 4 patients with clinical peritonitis, laparotomy, cholecystectomy, choledocholithotomy and sanitation of the abdominal cavity were performed according to emergency indications. Another 5 patients with a progressive clinical picture of acute hypercholesterolemia and an unsuccessful attempt at EPST underwent cholecystectomy with choledocholithotomy from an open mini-access.

Thus, two-stage surgical treatment was performed in 11 (61.1%) patients with moderate severity and 9 (81.8%) with severe severity of acute hyperthyroidism. In cases of mild OHCA, two-stage surgical treatment was performed in 13 (24.1%) patients; one-stage radical surgery was performed in 41patients. All surgical interventions in the main group of patients were completed by drainage of the common bile duct, of which 56 had external drainage, and 27 had NBD with endoscopic transduodenal intervention.

In order to relieve inflammation in the bile ducts and prevent the formation of microabscesses and abscesses in the liver, these patients underwent sanitary perfusion of the biliary tract with a 0.06% sodium hypochlorite solution using a method developed by us. Intrabiliary sanitation was performed

through drainage tubes installed in the hepaticocholedochus (HC) after choledocholithotomy in 56 patients and NBD in 27 patients.

After choledocholithotomy, 2 paired tubes were installed in the lumen of the common bile duct, one of which (thin with a lumen diameter of 2 mm) in the direction of the proximal end of the GC, the second (with a wider lumen of up to 5 mm) in the distal direction of the GC (Fig. 1).



А **Б**

Fig.1. Scheme of sanitary perfusion of the biliary tract through drainage in GC(A) and conducting it with the patient (B).

Sanitation perfusion of the biliary tract from the first day was carried out with 400.0 ml of an anolyte 0.06% sodium hypochlorite solution with pH = 6 until the bile microflora was normalized. The anolyte solution of sodium hypochlorite, being a strong oxidizing agent in the bile ducts, contacted bile and diluted it, increasing the degree of bile secretion through the drainage (Table 1).

Table 1.

Significance of differences in the results of the degree of increase in bile secretion (ml/day)

Days after gallbladder decompression	1	2	3	4	5	6
Without endobiliary sanitation	41±1,2	70±2,2	121±3,4	210±5,3	250±7,7	280±6,5
During endobiliary sanitation with sodium hypochlorite	40±1,4	100±3,5	200±4,7	340±7,2	370±7,6	420±7,1
Significance of differences	-	p>0,05	p<0,05	p<0,05	p<0,05	p<0,05

Sodium hypochlorite was prepared using an EDO-4 apparatus. To prepare anolyte and catholyte solutions, a STEL-MT-1 apparatus was used.

The results obtained from the study of bile viscosity (we used a capillary viscometer VK-4 to determine blood viscosity) showed that in the main group, by 2±0.3 days from the start of sodium hypochlorite administration, bile viscosity indicators normalized and averaged 0.5-0. 6 USD, whereas in the control group, bile viscosity indicators normalized at 5±0.4 days.

Getting into the intrahepatic ducts and diluting the bile, the anolyte solution of sodium hypochlorite contributed to the sanitization of the bile ducts, reducing high titers of microbial bodies. As our studies have shown, it is “acidic” solutions (anolytes) of sodium hypochlorite that have pronounced disinfectant properties and antimicrobial activity. At the same time, the introduction of 400.0 ml of a 0.06% anolyte solution of sodium hypochlorite reduced the titer of microbes in bile inoculation, and it steadily decreased in the subsequent days after administration.

Microbiological examination of bile was carried out on days 1-3-5 and before removal of the drainage. In this case, Escherichia coli - 75.2%, Klebsiella - 12.3%, Enterobacter - 8.1% and various associations were most often identified. On the 5th day after intrabiliary sanitation, negative bile cultures were observed in 72% of patients; on the 12th day, complete eradication of the microbial landscape occurred (Fig. 2).

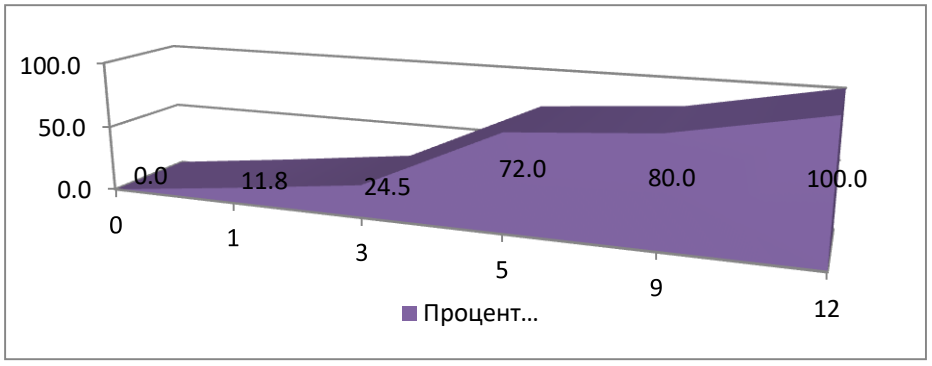
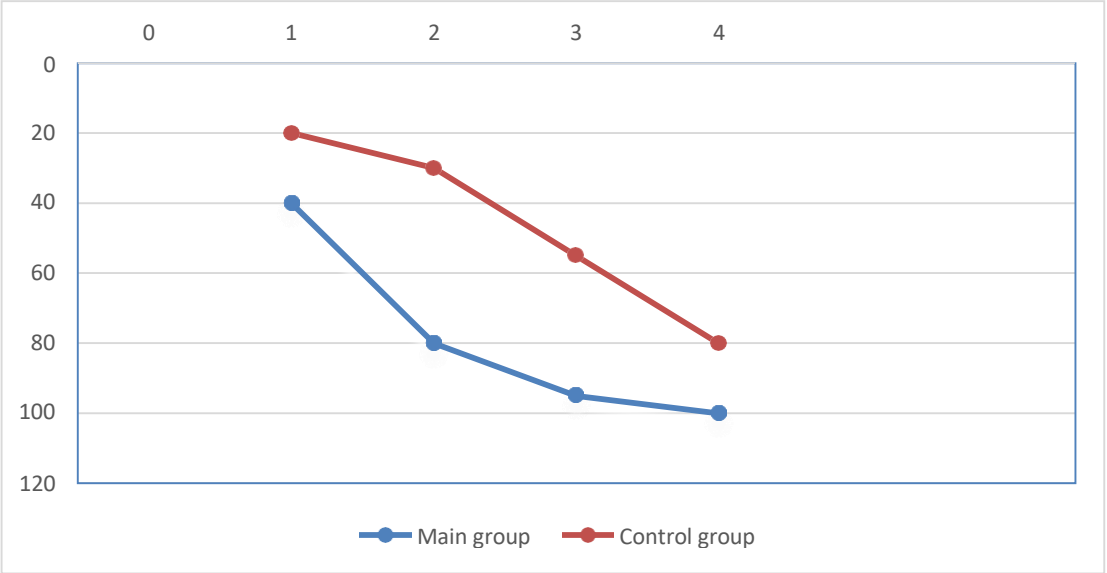


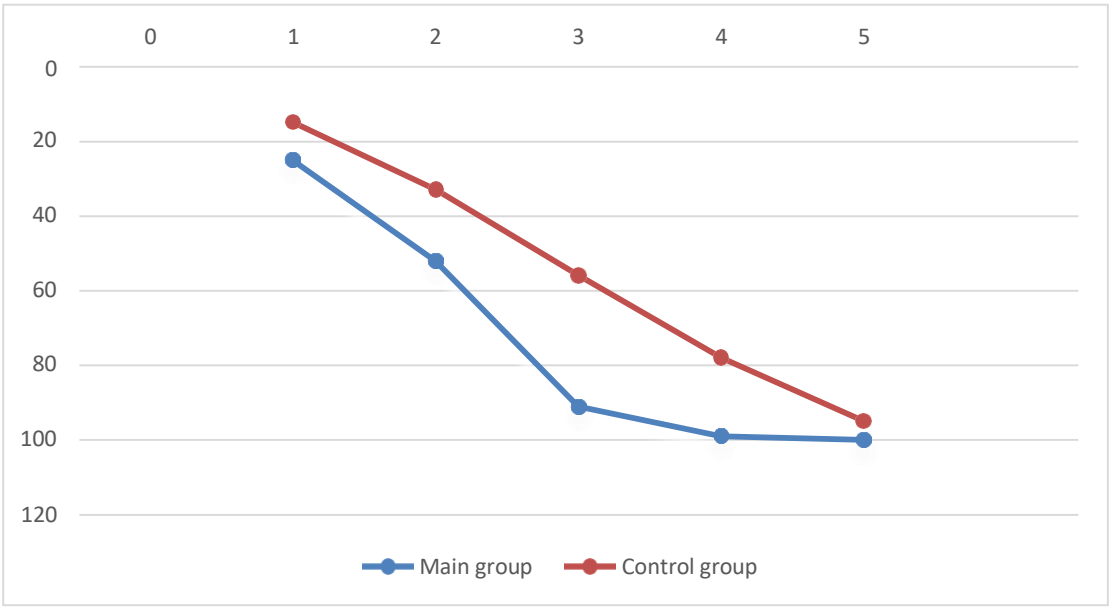
Fig.2. Dynamics of eradication of the microbial landscape of bile during intrabiliary sanitation with sodium hypochlorite (%/day).

After obtaining a sterile result of bile culture or its significant reduction, the bile ducts were washed with a catholyte solution (pH = 8) of sodium hypochlorite, which is a donor of active oxygen and also promotes rapid regeneration. The effectiveness of complex therapy for WHC was also assessed by regression of biochemical blood parameters, the level of postoperative complications and mortality.

When analyzing the results obtained, it turned out that the level of total bilirubin in the main group differed significantly in the dynamics of decrease, in contrast to patients in the comparison group. Also, when analyzing the results obtained, the indicators of alkaline phosphatase activity and AST levels normalized much earlier (Fig. 3 a, b, c).



A



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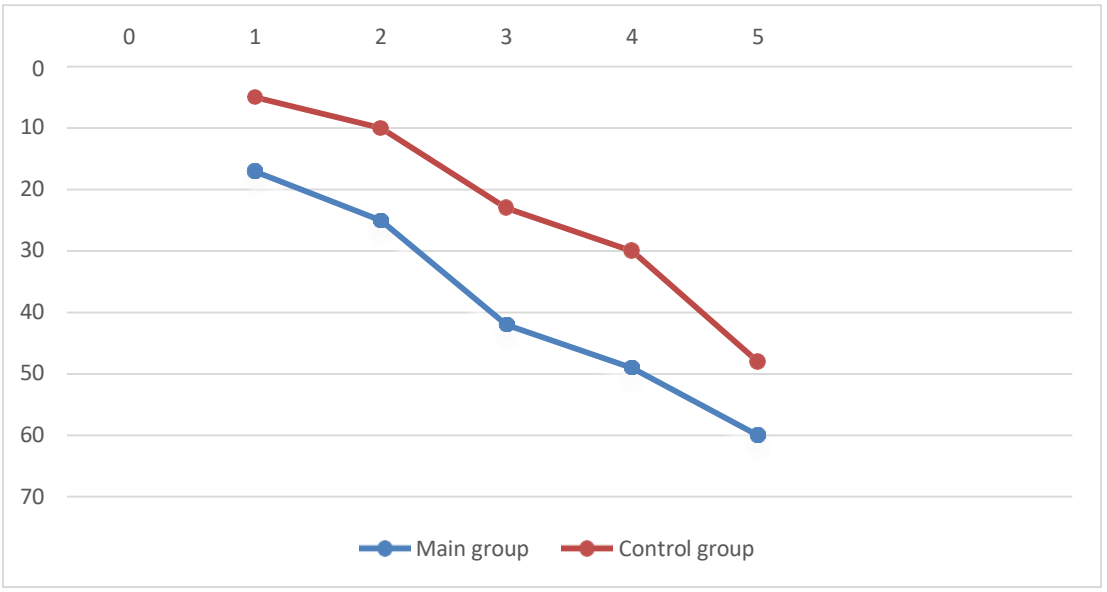

В

Fig.3. Dynamics of normalization of the level of total bilirubin (A), alkaline phosphatase (B), AST (C) in the study groups (%/day).

In 61 patients in the comparison group, surgical interventions for the correction of acute gastrointestinal tract due to cholelithiasis were performed in one stage: cholecystectomy with choledocholithotomy was performed from a mini access in 13 patients, and from a wide laparotomy approach in 48 patients. At the same time, the patients were operated on with acute destructive cholecystitis in 15 cases, with acute destructive cholecystitis complicated by peritonitis in 12 cases. 34 patients were operated on for WHC due to choledocholithiasis and chronic calculous cholecystitis.

The most serious complications in the control group were cholangiogenic liver abscesses and biliary sepsis, which caused deaths in 4 patients. Continued peritonitis in another observation led to an unfavorable outcome. The mortality rate was 8.2%. Purulent-septic complications in the postoperative period were observed in 15 patients (24.5%).

In the main group, postoperative complications developed in 10 patients (12.1%), 2 (2.4%)

patients died (1 - postoperative pancreatitis, 1 - ongoing peritonitis). The relief of cholangiogenic liver abscesses and biliary sepsis in the postoperative period is noteworthy.

Conclusions.

1. Staged surgical treatment with the use of decompressive interventions was carried out in 81.8% of patients with severe, 61.6% of moderate severity and 24.1% of patients with mild severity of AHC. Optimization of the tactical and technical aspects of surgical interventions, taking into account the severity of acute gastrointestinal tract infection, made it possible to stop the phenomena of cholestasis and purulent intoxication and improve the results of radical operations.

2. Trans-drainage sanitation of the biliary tract contributed to the early relief of cholangitis, prevention of the formation of cholangiogenic abscesses and the development of biliary sepsis. A reduction in postoperative complications was achieved from 24.5% to 12.1%, and mortality from 8.2% to 2.4%.

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