

Features Of Surgical Management in Acute Cholecystitis in Patients of Elderly and Old Age Complicated by Bile Ducts

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ABSTRACT

Optimal schemes of surgical treatment of acute cholecystitis complicated by obstruction of the bile ducts have been developed using various methods of X-ray endoscopic decompression and sanitation of the biliary tract (cholecystostomy, papillotomy). A differentiated approach to determining the scope of the operation, depending on the degree of operational and anesthetic risk, is proposed. The expediency of expanding the indications for cholecystectomy from a mini-access in combination with transcholedochal papillotomy, which adequately restores the outflow of bile into the duodenum, while limiting the indications for open laparotomy, has been shown. The significance of endoscopic obliteration of the gallbladder in the complex treatment of patients after cholecystostomy with an unreduced risk of radical surgery due to concomitant diseases was determined.

ARTICLE INFO

Received: 26th November 2021

Revised: 30th December 2021

Accepted: 10th February

KEYWORDS

cholecystostomy,
papillotomy,
choledocholithiasis,
fibrocholedochoscopy,
fibrogastroduodenoscopy.

Introduction.

The increase in the incidence of acute cholecystitis and the lack of a tendency to improve the results of treatment with its complications in patients of older age groups causes an increased interest of clinicians in this pathology. [1,2] . There are no common views on the choice, and the sequence of application of radiation and endoscopic methods of treatment, as well as operations from mini-accesses, depending on the nature of the complications of acute cholecystitis and the degree of surgical risk. In domestic and foreign literature, various tactical schemes are presented, namely, operations in the "acute" or "cold" period of complicated cholecystitis [3,4,5,6] . The relation to operations on the bile ducts in acute cholecystitis, as well as to the final stage of treatment of high-risk patients after preventive cholecystostomy , has not been determined [7,8,9,10,11] . The long-term results of treatment of this category of patients cannot be considered satisfactory due to relapses of acute cholecystitis and biliary fistulas after cholecystostomy. The point of view is becoming more and more widespread, according to which the question of the treatment of this pathology should not be solved unambiguously, since each of the methods has certain advantages and disadvantages [12,13,14] . Most authors tend to use mini-accesses and video laparoscopy for cholecystectomy. Indications for endoscopic and open surgery for obstruction of the bile ducts in patients with acute cholecystitis are very similar, and the choice of a method for restoring the outflow of bile into the intestine remains subjective. Thus, endoscopic papillotomy (EPT) makes it possible to avoid risky surgical intervention, but its implementation is possible only in 80-90% of patients, and in every fifth case, stones from the ducts cannot be removed [15,16,17] . The use of transduodenal papillosphincterotomy and

choledochoduodenostomosis, despite their high efficiency, is limited due to their trauma and technical complexity. The conflicting opinions of surgeons on the role of various methods of treating acute cholecystitis complicated by lesions of the bile ducts, especially in elderly patients, indicate the need to clarify the indications for existing methods of treatment and the development of new ones, as well as the choice of rational options for surgical tactics. [18,19] .

The aim of the study was to develop options for surgical tactics with the improvement on this basis of the results of treatment of acute cholecystitis complicated by obstruction of the bile ducts in elderly patients.

Material and research methods.

The work is based on an analysis of the results of treatment of 96 patients with acute cholecystitis complicated by obstruction of the bile ducts, operated on in the period from 2010 to 2020. The average age of patients was 76 years (range 70-92), every third patient was over 80 years old. The ratio of women and men was 2.8: 1. In 23 patients, the duration of the anamnesis exceeded 10 years. With the first attack of the disease, 10 patients (10.4%) were admitted to the surgical hospital. Previously, 58 patients (60.4%) were treated inpatiently for cholecystitis and cholangitis, 29 of them - two or more times. During the first day after the attack, 15 patients (15.6%) were admitted, and 32 (33.3%) were hospitalized three days later. Of 96 patients, 77 had destructive cholecystitis, including 11 - gangrenous (Table 1).

Table 1

Distribution of patients according to the form of inflammation of the gallbladder and the nature of the lesion of the bile ducts

Form of inflammation of the gallbladder	Total patients		Pathology of the bile ducts		
	Abs.	%	Choledocholithiasis	Choledocholithiasis + BDS stenosis	Stenosis BDS
Catarrhal	19	19,8	10(10,4%)	5(5,2%)	4(4,2%)
Phlegmonous	66	68,7	27(28,1%)	21(21,9%)	18(18,7%)
Gangrenous	11	11,5	5(5,2%)	4(4,2%)	2(2,1%)
Total	96	100,0	42(43,8%)	30(31,2%)	24(25,0%)

Extravesical spread of inflammation was observed in every third patient, exudate in the abdominal cavity was found in 12, perivesical infiltrate - in 32 patients, including 3 - abscess. In the structure of the pathology of the bile ducts, choledocholithiasis was detected in 76 patients (in 30 in combination with stenosis of the BDS), in 24 patients - stenosis of the BDS without choledocholithiasis. Obstructive jaundice was observed in 76 patients (79.2%), of which in 69 the total bilirubin content in blood serum exceeded 60 $\mu\text{mol/l}$. In 41 patients (42.7%) the course of the disease was complicated by cholangitis. diseases of the cardiovascular system, respiratory organs and diabetes mellitus prevailed in the structure of concomitant pathology. 75 patients had a combination of 2-3 or more systemic diseases. Due to the high risk due to comorbidity, 31 patients who had previously been treated inpatiently for cholelithiasis were denied surgery. Upon admission to the surgical hospital, the condition of 63 patients was regarded as moderate, and 33 - severe. The severity of the somatic condition, the degree of risk of anesthesia and surgery were assessed based on the classification of the American Association of Anesthesiologists (ASA). The diagnosis was based on a comprehensive examination using X-ray endoscopic methods. At the stages of diagnosis and treatment, 124 ultrasound examinations of the organs of the hepatopancreatobiliary zone, 37 fibrogastroduodenoscopy, 33 laparoscopy, 27 endoscopic retrograde cholangiopancreatography, 33 direct radiopaque cholecystocholangiography were performed. To detect the pathology of the bile ducts during the operation after their examination, 36 fibrocholedochoscopies and 35 cholangiographies were performed. To control sanitation and obliteration of the gallbladder, 36 fistulocholecystoscopies were performed.

Research results.

Developing complications, as well as concomitant pathology, the manifestations of which were masked by acute cholecystitis, had a significant impact on the clinical picture and course of the disease. The clinical picture of acute cholecystitis was clearly expressed and corresponded to the form of inflammation of the gallbladder in 88.7% (55 of 62 patients) younger and 67.6% (23 of 34) older than 80 years. In 19.4% of patients older than 80 years, the clinical manifestations of the disease created an erroneous idea of the severity of acute inflammation in the gallbladder and its prevalence in the abdominal cavity. Only every second patient with this complication was able to detect a perivesical infiltrate with an enlarged gallbladder on palpation. Indicators of temperature reaction and leukocytes in peripheral blood only in 2/3 of patients objectively reflected the severity of inflammation in the gallbladder and surrounding tissues. Clinical manifestations of obstruction of the bile ducts in choledochal lithiasis in 80.3% of patients (61) were represented by a characteristic icteric variant of the clinical course, while painless jaundice was observed in 14.5% of patients (11). An asymptomatic variant of the clinical course of choledocholithiasis was observed in 15.8%. The classic triad of cholangitis occurred in 24 (58.5%) of 41 patients with this complication. The leukocyte reaction and body temperature did not reliably reflect the severity of inflammation in 31.1% of cases (24 out of 77). An analysis of the clinical manifestations of acute cholecystitis complicated by lesions of the bile ducts showed the following: the older the patient, the higher the risk of clinical diagnosis errors and incorrect treatment tactics. For. to identify the cause of the violation of the outflow of bile into the duodenum, the following X-ray endoscopic studies are necessary: intraoperative fibrocholedochoscopy, cholangiography (with emergency CE) or direct ante- and retrograde cholangiography (with percutaneous cholesterol and EPT). The experience of diagnosing the causes of violation of the outflow of bile into the duodenum has shown that the choice of the primary research method is influenced by the variant of treatment tactics, namely, the possibility of carrying out therapeutic measures simultaneously with diagnostic measures (decompression and sanitation of the biliary tract). The choice of surgical tactics was carried out taking into account the severity of the underlying and concomitant diseases. Indications for operations at certain times remained traditional, but the approach to the treatment of patients with high surgical and anesthetic risk (III- IV) has changed significantly. Patients whose general condition allowed to undergo surgery were operated on at the height of the attack. At high risk of surgery, treatment was performed using minimally invasive and endoscopic methods (Table 2).

Table 2
Characteristics of operations and stages of treatment

Stages of surgical treatment and types of operations	Number of Patients (96)	Age of patients	
		70-80 years (62)	Over 80 years old (34)
Simultaneous HE+ HLT +THPT	32	23	9
First stage: Cholecystostomy	33 (2)	22 (one)	eleven (one)
Second stage: CE + CLT + Hst. EOZHP	10 12	7 5	3 7
First stage: EPT	27 (one)	15	12
Second phase: HE+	26	14	12
"Forced" CE and HLT	4 (2)	2 (one)	2 (one)

Note: The numbers in parentheses are the absolute number of deaths.

In 32 patients with clinical and ultrasound signs of destructive cholecystitis complicated by choledocholithiasis and obstructive stenosis, emergency or urgent surgery was performed from a mini-

access in the amount of cholecystectomy, choledocholithotomy with transcholedochal papillotomy and choledochostomy. The use of methods of endoscopic decompression of the biliary tract was abandoned in favor of a radical operation with low bilirubinemia (up to 100 $\mu\text{mol/l}$), the absence of a pronounced perivesical infiltrate, and severe comorbidity. In these cases, a one-stage radical operation gave a good result. To reduce the likelihood of mini-access conversion before surgery, the anatomical position of the liver, the type of its hilum, the position of the gallbladder and its neck, and the depth of the hepatoduodenal ligament were determined by ultrasound. Favorable conditions for surgery from a mini-access were created with an extracostal position of the liver, an open type of its gate, a medial position of the gallbladder and a depth of the hepatoduodenal ligament of up to 12 cm. type of liver gate, massive paravesical infiltrate and abscess. A feature of the transcholedochal PST technique was the use of a specially designed papillotome. Flexibility and small diameter allow the instrument to be inserted through the fibercholedochoscope channel and used with mini-access. Transcholedochal PST was performed after fibrocholedochoscopy and probing of the OBD channel. In case of stenosis, BDS was injected through the choledochotomy opening under the control of a fibrocholedochoscope with a papillotomy. The working part of the tool with a closed knife was passed through the BDS channel into the duodenum. With the help of the handle, the knife was pulled out to a height of 5-10 mm. The papillot was set so that the knife cut through the wall of the BDS opposite the interductal septum, for 10-12 hours according to the conventional dial. When extracting the papillotome into the choledoch, a retrograde dissection of the stenotic BDS occurred. Control of hemostasis and adequacy of PST was carried out using a fibrocholedochoscope. Transcholedochal PST was considered sufficient if the endoscope with a diameter of 5.6 mm passed freely into the duodenum. Examined the walls of the dissected BDS. The operation was completed by suturing the choledochotomy orifice and draining the choledochus through the stump of the cystic duct or the upper edge of the sutured choledochotomy incision. Transcholedochal PST using a flexible papillotome is a low-traumatic, technically simple and short operation that does not require mobilization and opening of the duodenal lumen. Transcholedochal PST, performed simultaneously with cholecystectomy, adequately restored the outflow of bile into the duodenum and avoided the second stage in the form of EPT. Due to the high operational and anesthetic risk (SH-D/class according to ASA), 60 patients underwent staged treatment. Used for diagnostic purposes, ultrasound and laparoscopy, along with high information content, also had therapeutic potential. In 33 patients at the height of the attack, cholecystostomy was performed, of which 24 patients underwent transperitoneal cholecystostomy and 9 patients underwent transhepatic cholecystostomy. No bile leakage was noted in any of the patients. A positive clinical response to percutaneous cholecystostomy was observed within 72 hours after the procedure and was expressed in a drop in temperature, the disappearance of symptoms of acute cholecystitis, a decrease in white blood cells to normal values or at least 25%. A positive effect was observed in all patients except one. In this case, a patient with gallbladder empyema required urgent cholecystectomy. When the inflammatory process subsided in the gallbladder, the cystic duct was unblocked and the amount of bile separated through the drainage increased. The average daily flow rate of bile through cholecystostomy was 400 - 600 ml. However, in 8 patients, the gallbladder was not unblocked, and it was not possible to perform biliary decompression through cholecystostomy. In such cases, as a rule, there were indications for urgent endoscopic papillotomy. Elective surgery after preventive cholecystostomy was performed in 22 patients, including 19 patients after resorption of the perivesical infiltrate. In 27 patients with severe jaundice and cholangitis without clinical and ultrasound signs of gallbladder destruction, endoscopic papillotomy with lithoextraction was performed at the first stage, and cholecystectomy from a mini-access was performed at the second stage (after 3-7 days). Radical operations after normalization of homeostasis and correction of concomitant diseases were considered the best option for completing the treatment process. However, in a number of patients, despite targeted therapy for concomitant diseases, it was not possible to reduce the degree of operational and anesthetic risk, and radical surgery remained unbearable. Observation of 12 patients with acute cholecystitis discharged after cholecystostomy without radical surgery due to severe concomitant diseases showed that all had a relapse of the disease. The causes of recurrence of acute cholecystitis were stones remaining in the gallbladder, persistent occlusion of the cystic duct, infection and inflammation of the wall. In this regard, it became obvious that in order to complete the treatment of patients with a high risk of surgery after LHS, a complete

sanitation of the gallbladder and elimination of its cavity is necessary. To achieve this goal, the technique of endoscopic sanitation and obliteration of the gallbladder was used. Endoscopic obliteration of the gallbladder (EGGB) was performed in 12 patients after cholecystostomy. Refusal of planned surgical treatment was strictly justified: a) severe concomitant pathology that could not be corrected; b) full-fledged endoscopic sanitation of the biliary tract with adequate restoration of the outflow of bile into the intestine. ECFP was started after the removal of calculi and inflammatory products from the gallbladder cavity. To do this, a hollow rigid endoscope was used, which was inserted through the formed channel of the cholecystostomy into the cavity of the gallbladder. Obliteration of the cystic duct orifice and destruction of the mucosal wall of the bladder was performed through the lumen of the endoscope using a special probe connected to the active electrode of a surgical electrocoagulator. The completeness of the destruction of the mucosa was controlled by repeated examination with additional electrocoagulation of the remaining sections of the mucosa. EOZHP was completed by washing the cavity of the gallbladder with Pervomur solution, which contributed to productive aseptic inflammation, which accelerated scarring of the wall and shrinkage of the gallbladder. Control over the process of obliteration of the gallbladder was carried out using ultrasound, fistulography and fibrocholecystoscopy. The terms of obliteration of the gallbladder with the discharge of patients from the hospital corresponded to 3-5 weeks from the moment of cholecystostomy. No complications were observed in ESOP. The long-term results of EOZHP were followed up in 12 patients in terms of 6 months, up to 3 years. None of the patients had a recurrence of acute inflammation of the gallbladder. Of the 96 patients, 5 (5.2%) died. Analysis of postoperative mortality and complications showed that the main cause of death in 3 patients was pronounced endotoxemia against the background of multiple organ failure, destructive cholecystitis, obstructive jaundice and cholangitis. Cardiovascular and pulmonary insufficiency as the cause of death prevailed in 2 patients. Based on the results of our work, we consider it appropriate to present the algorithm for the treatment of acute cholecystitis in the form of a diagram (Fig. 1).

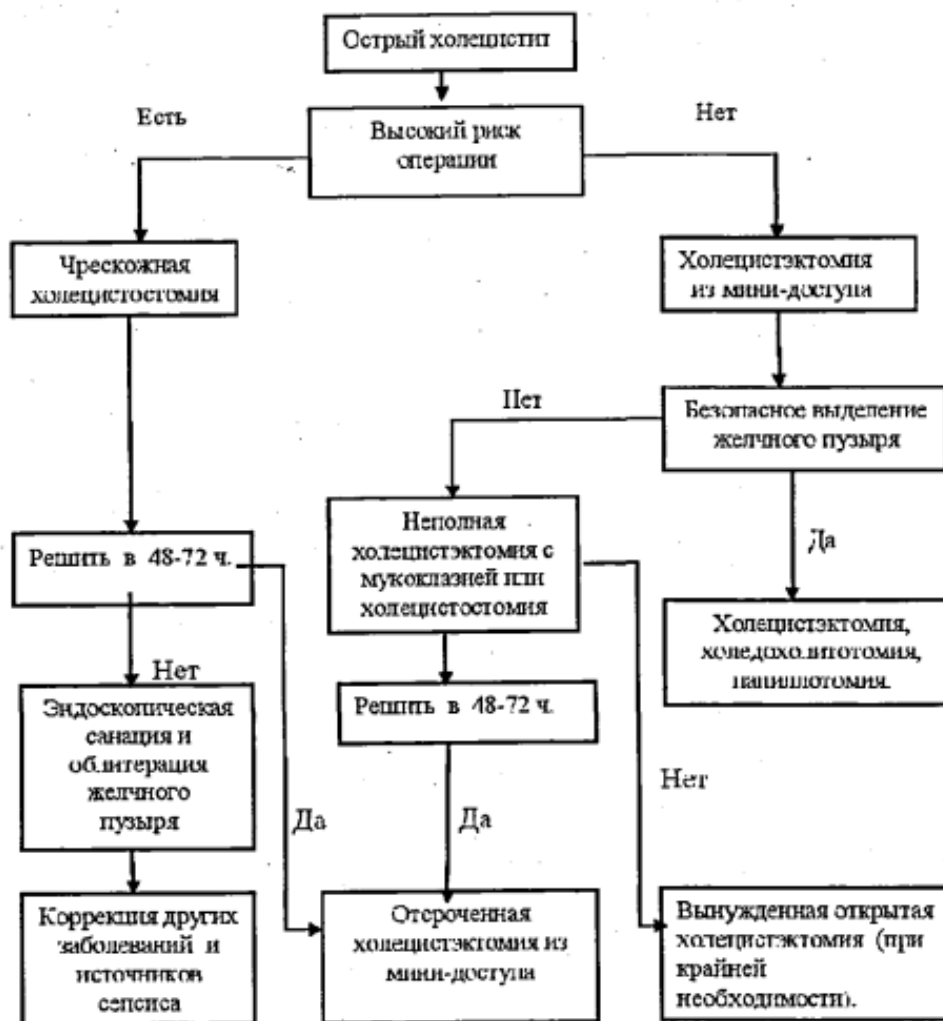


Fig.1. Scheme and algorithm of surgical treatment of acute cholecystitis

In the high-risk group (ASA class III or IV), our approach consisted of gallbladder drainage (percutaneous or yes paroscopic) followed by intervals for the following surgical interventions: general anesthesia (from III to II class); b) transistular sanation of the gallbladder with its subsequent demucosation and obliteration of the cavity, with a continuing high risk of general anesthesia (class IV). Obliteration of the lumen of the gallbladder is advisable, as it prevents the recurrence of acute cholecystitis. With a low risk of general anesthesia (class II according to ASA), radical surgery (cholecystectomy, choledocholithotomy, transcholedochal papillotomy) was successful in 92%. Technical difficulties in removing the gallbladder and isolating hepaticocolledoch occurred in 8% of cases and were due to severe inflammatory changes in the subhepatic space (pronounced infiltrate). In these cases, incomplete cholecystectomy (leaving the neck) with mucoclasia or cholecystostomy with lithoextraction and subsequent obliteration of the bladder was performed. Restoration of an adequate outflow of bile into the duodenum should be done through endoscopic papillotomy. We believe that in severe perivesical infiltrate, the interval from cholecystostomy to cholecystectomy is crucial for successful radical intervention from the mini-access. The control ultrasound in combination with the data of clinical and laboratory studies make it possible to correctly determine the timing of radical operations.

Conclusion.

1. In senile patients, acute inflammation of the gallbladder manifests itself weakly and atypically in 17.7% of cases (in 17 patients out of 96). The triad of symptoms characteristic of acute cholangitis (pain, jaundice, fever) is absent in 41.5% of cases (in 17 patients out of 41). The leukocyte reaction and body temperature unreliably reflect the severity of inflammation in 31.1% of cases (in 24 out of 77 patients).

2. The operation should be performed on days 1-3 in case of bilirubinemia less than 100 $\mu\text{mol/l}$, absence of perivesical infiltrate and severe concomitant diseases. Cholecystectomy, choledocholithotomy with transcholedochal papillotomy from a mini-access is an effective, low-traumatic and short operation. To reduce the likelihood of mini-access conversion, ultrasound is needed to determine the anatomical position of the hilum of the liver, gallbladder and the depth of the hepatoduodenal ligament.

3. With a high operational and anesthetic risk for the underlying disease (perivesical infiltrate, cholangitis) and concomitant pathology, treatment is carried out in two stages. At the first stage (1-2 days), percutaneous cholecystostomy and endoscopic papillotomy are performed. At the second stage, after the condition improves and the degree of risk decreases, cholecystectomy is performed from a mini-access.

4. Non-reducing high surgical risk after cholecystostomy is an indication for endoscopic obliteration of the gallbladder, which, in combination with endoscopic papillotomy, becomes an alternative to cholecystectomy with transcholedochal papillotomy, as it prevents the recurrence of acute cholecystitis and restores the outflow of bile into the duodenum.

5. With active-individual tactics for the treatment of acute cholecystitis in senile patients complicated by obstruction of the bile ducts, and based on X-ray endoscopic methods for eliminating cholestasis and performing cholecystectomy with choledocholithotomy and transcholedochal papillotomy from a mini-access, mortality is 5.2%.

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