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**Annotation.** *Acute destructive cholecystitis in combination with choledocholithiasis and purulent cholangitis are 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 violation of the outflow of bile. Considering the fact that most patients with acute destructive cholecystitis and progressive obstructive jaundice are admitted to general surgical hospitals, different approaches to diagnosis, tactical decisions and treatment are not uncommon. When a diagnosis of complicated forms of cholelithiasis has been established, the choice of surgical intervention method often depends on the capabilities of the hospital on duty and the medical team, and sometimes is determined by the unified treatment tactics approved in a given institution.*

**Keywords.** *Liver, cholecystitis, cholangitis, gallstones, ultrasound.*

## **RELEVANCE**

Acute cholecystitis and obstructive cholangitis are 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 violation of the outflow of bile. The leading cause of impaired bile outflow is the development of cholelithiasis, and as retrospective studies show, today every tenth person has cholelithiasis of varying severity, and choledocholithiasis as a complication occurs in 20-30% of cases (Hungness E., 2016).

A feature of this pathology is the development of obstructive jaundice, and statistically in this age group it occurs 35% more often than at a younger age. And it is the development of biliary hypertension, due to mechanical disturbances in the outflow of bile, that explains the formation of cholangitis.

The urgency of the problem has increased due to the increase in the number of patients with complicated forms of cholelithiasis and atypical forms of choledocholithiasis, and the increase in surgical activity, especially in elderly and senile patients.

Complicated forms of cholelithiasis in patients of older age groups, especially the elderly, are characterized by a nonspecific clinical picture, high variability and often blurred

clinical manifestations, and this is the reason for frequent errors in diagnosis and choice of surgical tactics; today, in more than 20% of cases, a similar type occurs painting. As you know, diagnosing bile duct pathology has its own difficulties, because With this pathology, the clinical picture of gallbladder damage is very poor. It should also be noted that stones in the bile ducts very often do not manifest themselves, which is why they are called “silent” stones. All this together is the reason for late hospitalization of patients, so in the first 12 hours only 10-12% of the total number of patients seek qualified medical care, after 24 hours or more about 50% of patients, the rest of the patients are hospitalized in the first three days from the moment of the onset of an acute attack. It is these reasons that lead to an increase in the number of complications, thereby worsening the effectiveness of treatment.

Purpose of the study: Improving the results of treatment of patients with complicated forms of cholelithiasis by developing and implementing tactics of interventions on the biliary tract using diapeutic and X-ray endoscopic methods.

Materials and methods of research. The condition of the gallbladder and peri-vesical tissues was characterized on the basis of determining the size, wall thickness, assessing echogenicity, homogeneity, external-internal contours, identifying changes in the contents of the gallbladder, the state of liquid fractions, the presence and displacement of stones, echo density of the gallbladder bed.

Acute obstructive cholecystitis at an early stage of its development was characterized by an increase in the transverse size of the gallbladder by more than 30 mm; An increase in the length of the bladder of more than 100 mm was often detected. The wall of the bladder could have been somewhat thickened.

A heterogeneous pattern of echogenicity of the gallbladder wall (a combination of two or more degrees of echodensity) was noted in almost all patients. As a rule, in patients with acute cholecystitis, different parts of the gallbladder wall showed unequal thickness and degree of echogenicity - “layering”, which indicated destructive changes in the bladder wall. The peri-vesical infiltrate in acute cholecystitis was characterized by the presence of a space-occupying formation of varying echogenicity around the gallbladder. Depending on the echo density, loose and dense infiltrate was distinguished. The loose infiltrate was characterized by reduced echogenicity, heterogeneity of echo density in different areas, looseness, blurriness and unclear contours. The dense infiltrate was characterized by increased tissue echogenicity and echoheterogeneity.

A similar sonographic picture was observed during the formation of a perivesical abscess, with more pronounced hypoechogenicity around the gallbladder.

Thus, ultrasound performed upon admission and in dynamic mode made it possible to obtain accurate information about the size of the gallbladder, the presence or absence of stones, the condition of its wall and peri-vesical tissues, i.e. obtain data on the presence of obstruction of the cystic duct, destructive changes in the bladder wall, the presence of perivesical infiltrate or abscess. In addition, ultrasound made it possible to assess the

condition of the extrahepatic biliary tract - size and homogeneity, and made it possible to simultaneously detect the presence of choledocholithiasis and biliary hypertension syndrome.

Surgical navigation was carried out by determining the intended puncture site, ultrasound guidance of the manipulation, and monitoring the emptying of the gallbladder. The intended puncture site was determined by scanning the right hypochondrium with a convex 3.5 MHz sensor of the Logic-400 or AokaSSD-4000 ultrasound machine.

Under ultrasound control, a point was selected on the skin surface corresponding to the shortest distance between the lumen of the gallbladder and the sensor. At the same time, the need for a transhepatic location of the puncture channel was taken into account. As a rule, the intended puncture point was located in the intercostal space above the costal arch along the anterior axillary line. If the edge of the liver was located low under the costal arch, it was considered possible to choose the puncture site in the right hypochondrium along the lower edge of the costal arch. The site of the intended puncture was marked, and the operator remembered the direction of the upcoming puncture in the direction of the sensor. Then the ultrasound probe was moved to the right hypochondrium and, with continuous scanning, a clear image of the gallbladder appeared on the monitor screen. After treating the surgical field and anesthesia with a 0.5% solution of novocaine, a scalpel was used to puncture the skin at the puncture site. A Chiba 22 G needle was passed through the soft tissue of the chest or abdominal wall. After the needle entered the liver tissue, clarifying navigation was performed using ultrasound scanning. At the same time, the depth and direction of the puncture were specified.

It is important to place the ultrasound device probe, gallbladder and puncture needle in the same scanning plane. When the manipulation is performed correctly, the puncture needle is clearly visible on the monitor screen. If it deviates from the planned direction, only the point where the needle intersects the scanning plane is observed on the screen, or navigation becomes ineffective. The penetration of the needle into the lumen of the gallbladder was monitored visually on the screen of an ultrasound machine. To clarify the location of the needle in the lumen of the gallbladder, a small amount of anesthetic solution was injected under pressure. The resulting turbulence of the fluid clearly indicated the correct location of the needle cut in the lumen of the gallbladder. When the syringe plunger was pulled, the contents of the gallbladder began to be evacuated. The first portion of the contents was taken for subsequent bacteriological examination. Evacuation of the contents was characterized by a decrease in the volume of the gallbladder to minimal values and immediate resolution of the pain syndrome.

Results and discussion of the work: The entire surgical scope of percutaneous intervention was performed on an ultrasound machine with a sector sensor operating in 3.5 MHz mode with a removable puncture attachment. The telemonitor of this device includes an electronic matrix for guiding the puncture trajectory to the target organ. A special feature of the work is the determination of the angle of inclination, about 20°,

using a puncture attachment, and it is necessary that the stroke of the instrument coincides with the line on the monitor.

The drainage procedure was carried out using an “umbrella” stylet catheter with a special “basket” at the end, the diameter of the catheter was 4F and 9F on the Charrière scale, the length of the catheter was 25 cm. A special feature of this catheter is the presence of a cone-shaped narrowing, which makes it possible to fix it on the thickening of the stylet. As the fixed catheter is tensioned, the blades of the “basket” straighten and this makes it possible to freely insert the catheter into the cavity of the operating channel.

In the cavity of the gallbladder there is a catheter with shape memory, which makes it possible to be tightly fixed in the cavity and not fall out of it at the moment of withdrawal of the stylet, while the “basket” itself returned to its original position due to the “memory” of the material. The PPMS was performed under aseptic conditions in a specially equipped room under strict ultrasound scanning control.

Progress of the manipulation: The patient’s abdominal skin was treated with a 3% alcohol solution of iodine; at the point of intended injection, local anesthesia of the skin, subcutaneous tissue and muscles of the anterior abdominal wall was performed in layers with a 0.25% solution of novocaine or trimecaine (in case of an allergic reaction). these drugs). Next, a layer-by-layer incision was made into the skin, pancreas and aponeurosis m. obliquus externus abdomini using a double-edged scalpel with a depth of 1-1.5 cm. Under ultrasound control while holding the breath, fixing the distal end of the stylet catheter, the gall bladder is drained. The catheter was advanced until the drainage “basket” was completely in the gallbladder cavity, then the catheter was fixed and the stylet was removed.

The drainage tube was fixed to the skin by applying 2 silk sutures. Considering the anatomical variability of the projection of the gallbladder, the puncture point is individual for each patient; one should also not lose sight of the functional state of the liver, which will also contribute to a change in its position. The average point for puncture corresponds to the passage of the linia clavicularis media below the edge of the costal arch.

Carrying out PCHMS is carried out by passing through the liver parenchyma in a given projection of the gallbladder, at a distance of 1.5-2 cm from its edge. This projection point facilitates passage between the body and the bottom in the most expanded area of the gallbladder under strict ultrasound control. As is known, the anatomical attachment of the posterior wall of the gallbladder to the liver is very variable, therefore, taking this factor into account, it is necessary to correctly calculate the access path using various ultrasound sections of the gallbladder.

Very often, if the trajectory is selected only taking into account the longitudinal ultrasound section of the gallbladder, when attached over a short distance, the introduction of the catheter leads to its entry into an area not fused with the liver parenchyma, and this will be the main reason for the entry of bile into the abdominal cavity during this intervention. A similar complication may occur with non-transhepatic

microcholecystostomy. Due to the above circumstances, it is necessary to calculate the trajectory using data from a transverse ultrasound section of the gallbladder; for the sensor is installed in such a way that the scanning puncture plane passes through the point of maximum value of the gallbladder wire slice and through the hepatic parenchyma.

In the case of correct conduction of PPMC, a complete evacuation of the contents of the gallbladder was carried out, then the drainage was slightly extended to wash the cavity until pure secretion was obtained. The complete emptying of the gallbladder cavity was assessed based on an echographic examination, and the purity of the discharged fluid was assessed visually. As a rule, visualization of the organ lumen on ultrasound is not visible with a normally functioning catheter.

As indicated in Chapter 4, after PCI, the second stage included CE in 31 patients (LCE in 13 patients, MLCE in 18). Of these, PTMC in combination with EPST was performed in 2 patients and MLCE was completed. In 5 patients, PPMC was the final method of treatment. Also, PTMC in combination with EPST was the final method of treatment in 2 patients.

Conclusion. Prognostically unfavorable factors in the treatment of patients with complicated forms of cholelithiasis are the performance of emergency simultaneous radical operations in patients with acute destructive cholecystitis and purulent cholangitis with severe intoxication according to the Tokyo classification TG 18.

Sonodiaplectic methods of decompression of the gallbladder are an effective emergency method of treating complications of acute cholecystitis, allowing to stop purulent intoxication and at the subsequent stage of treatment to perform cholecystectomy laparoscopically in 29.6% and from a mini-access in 53.7%.

It is advisable to carry out X-ray endoscopic interventions in the scope of EPST with mandatory nasobiliary drainage in cases of purulent cholangitis and hyperbilirubinemia over 100  $\mu\text{mol/l}$ , and EPST was the final method of treatment in 16.1% of patients.

The priority use of minimally invasive decompression interventions in the staged treatment of patients with complicated forms of cholelithiasis contributed to early relief of the infectious process, prevention of the development of biliary and abdominal sepsis and reduced mortality from 5.1% to 2.4%, biliary and septic complications from 17.5% to 7.3%.

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