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POSSIBILITIES OF PERCUTANEOUS-TRANSHEPTIC MICROCHOLECYSTOSTOMY UNDER ULTRASOUND CONTROL IN SURGERY FOR ACUTE CHOLECYSTITIS

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Abstract: *In case of acute obstructive cholecystitis, percutaneous transhepatic microcholecystostomy (PTMCS) was performed in 38 patients. Developed tactical principles for minimally invasive treatment of acute complicated cholecystitis, based on early clinical sonographic and intraoperative diagnosis, stages of minimally invasive treatment using ultrasound-guided microcholecystostomy, laparoscopic and mini-accessible cholecystectomy with drainage of the common bile duct and endoscopic papilosphincterotomy allow us to individualize tactical and therapeutic approaches for acute complicated cholecystitis.*

Key words: *Acute cholecystitis, navigation surgery, operational and anesthetic risk.*

A resolving factor that eliminates intravesical hypertension and the substrate of purulent inflammation itself can be puncture followed by aspiration of the contents and drainage of the gallbladder in acute obstructive cholecystitis [1,2,6].

Minimally invasive manipulations under ultrasound guidance in the literature are referred to as ultrasound diagnostics or navigation surgery. Ultrasound-guided navigational puncture surgery is a new direction in minimally invasive surgery that makes it possible to cure some diseases of the abdominal organs without dissecting the integument. In acute cholecystitis, decompressive interventions are used under ultrasound guidance or laparoscopy. For the first time, the successful use of sonographic-guided percutaneous transhepatic microcholecystostomy (PTMS) was reported by M. Makuuchi et al. in 1998, the works of Sh.I. became classic in our country. Karimov and his school [3,4,5].

Sanitation techniques used under echosonographic control make it possible to eliminate the need for emergency surgery and gain the opportunity for preoperative preparation. Breaking the pathogenetic link of extravesical complications, progression of destruction of the gallbladder wall and the development of peritonitis through microcholecystostomy creates the possibility of correcting concomitant pathology. All this contributes to performing cholecystectomy as planned. Thus, many surgeons consider it appropriate to include navigation diapeutic techniques in the algorithm of staged surgical treatment of patients with AC.

Purpose of the study: To develop tactical principles of minimally invasive methods of treating acute cholecystitis and improve the methodology of percutaneous transhepatic microcholecystostomy under ultrasound guidance.

Material and research methods.

For acute obstructive cholecystitis, percutaneous transhepatic microcholecystostomy (PTMCS) was performed in 38 patients.

To perform PPCM, the examination of patients with acute cholecystitis began with an ultrasound scan of the abdominal organs.

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, and the 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; significantly less often an increase in the length of the bladder of more than 100 mm was detected. The wall of the bladder could have been somewhat thickened. This sonographic picture corresponded to acute cholecystitis without destructive changes in the gallbladder wall.

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.

Peri-vesical infiltrate in acute cholecystitis is 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.

In the majority of patients in both groups, the transverse size of the gallbladder exceeded 30 mm, which was a sign of obstruction of the cystic duct. These data are consistent with the data of various authors. In elderly and senile patients, more often than in patients under 60 years of age, the bladder size was less than 30 mm (5.4% versus 3.5%), which was associated with a more frequent development of acalculous gangrenous cholecystitis in the older age group.

With destructive cholecystitis, in most patients (97%) the wall was thickened (more than 5 mm)

Only in 1.3% of cases the thickness of the gallbladder wall exceeded 10 mm, and in 1.7% of cases the wall thickness was less than 5 mm.

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.

The choice of this surgical intervention is an alternative to emergency open surgical cholecystostomy in patients with acute destructive cholecystitis against the background of their serious condition, as well as a high risk of developing postoperative complications. All operations were performed under strict ultrasound control. In cases of detection of symptoms of obstructive jaundice, drainage of the gallbladder made it possible to achieve decompression of the biliary system and, as a consequence, resolution of jaundice.

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 (Fig. 1).

Rice. 1. Percutaneous transhepatic microcholecystostomy under sonodiapeutic control

The drainage procedure was carried out using an “umbrella” stylet catheter with a special “basket” at the end, the diameter of the catheter was 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 (Fig. 4.2).

Rice. 2. Percutaneous-transhepatic microcholecystostomy using the stylet-catheter method: a - a puncture needle with a catheter is inserted through the liver into the gallbladder; b - in the cavity of the gallbladder there is a catheter with shape memory (diagram)

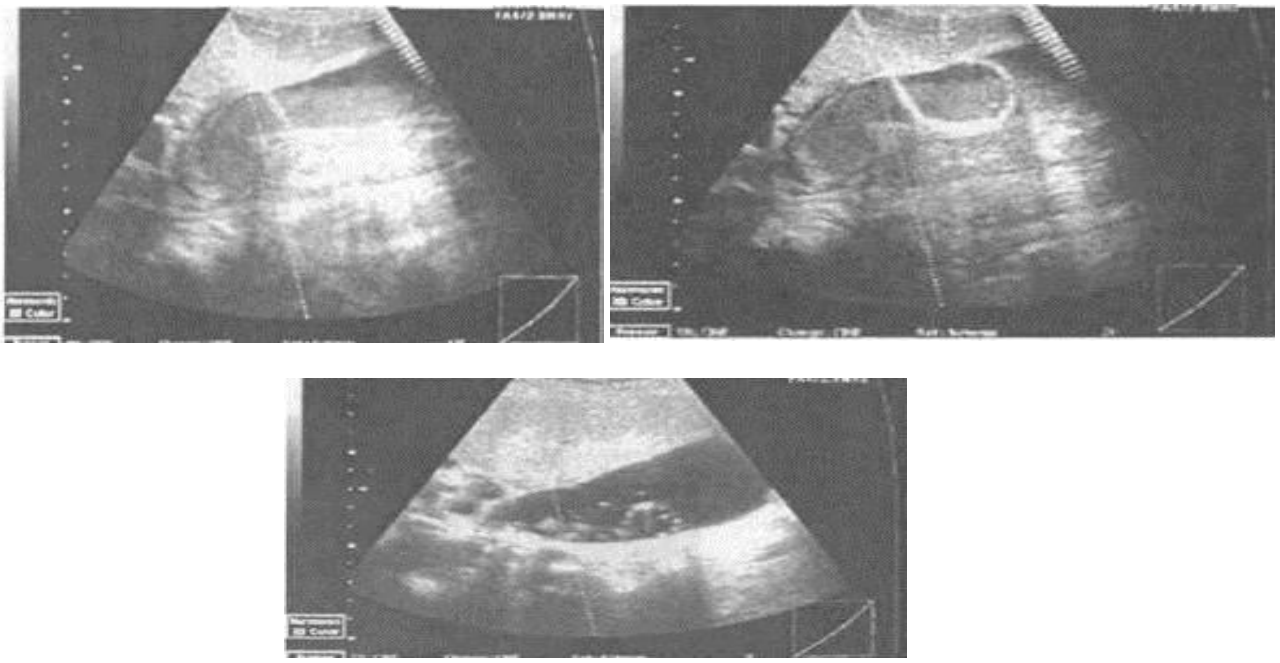
In the cavity of the gallbladder there is a catheter with shape memory, which makes it possible to be tightly fixed in the cavity and not fall out of it at the moment of withdrawal of the stylet, while the "basket" itself returned to its original position due to the "memory" of the material. The PPMS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

Progress of the manipulation: The skin of the patient's abdomen 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. Next, a layer-by-layer skin incision was made, aponeurosis m. obliqvus 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 gallbladder 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.

Results and its discussion.

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 (Fig. 3).



Rice. 3. Sonogram. Stages of execution of HCHMHS.

Very often, if the trajectory is chosen 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 which the sensor is installed in such a way that the scanning puncture plane passes through the point of maximum value of the longitudinal section of the gallbladder and through the hepatic parenchyma.

In the case of correct conduction of PPMS, 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.

After PCMC, the second stage included cholecystectomy in 31 patients (laparoscopic cholecystectomy (LCE) - 13 patients, minilaparotomy cholecystectomy (MLCE) - 18). Of these, PPCM in combination with endoscopic papillosphincterotomy (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.

Conclusions.

1. The developed tactics of staged surgical treatment, depending on the prevalence of the clinical picture of destructive cholecystitis, using ultrasound-guided FMCS, EPST, or a combination of both, allowed cholecystectomy to be performed laparoscopically in 39.4% and from a mini-laparotomy approach in 48.4% at the subsequent stage of treatment.

2. Developed tactical principles for minimally invasive treatment of acute complicated cholecystitis, based on early clinical sonographic and intraoperative diagnosis, stages of minimally invasive treatment using ultrasound-guided microcholecystostomy, laparoscopic and mini-access

cholecystectomy with drainage of the common bile duct and endoscopic papilosphincterotomy allow individualization of tactical and therapeutic approaches for acute complicated cholecystitis. cholecystitis.

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