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ULTRASOUND DIAGNOSTICS OF GALLBLADDER, INSIDE AND OUTSIDE OF THE LIVER IN GALLSTONE DISEASE

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Summary. Nowadays one of the main reasons for cholecystectomy is inflammatory diseases - cholecystitis, cholangitis and gallstone disease. To this day and in recent years, the most radical method of treatment remains cholecystectomy. Acute calculous cholecystitis (ACC) ranks third after acute appendicitis and acute pancreatitis among the urgent surgical diseases of abdominal organs. Patients with acute calculous cholecystitis make up 10-50% of the total number of patients with surgical diseases, and this disease is "aging". There is a certain tendency to ". **Keywords:** *Ultrasound, cholecystitis, gallbladder, biliary tract*

Annotation. In the world despite the development and implementation of more gentle methods of surgical intervention and fewer surgical complications, from 5% to 40% of operated patients continue to apply with various complaints from the gastrointestinal tract at different times after gallbladder removal. The problem of

diagnosis and treatment of intrahepatic and extrahepatic biliary stasis in patients at different times after cholecystectomy is urgent. Acute stone disease is accompanied by an active inflammatory process of the biliary system. In this case, decompression of the biliary tract is performed as early as possible.

Many modern studies have shown that almost all patients with gallstone disease have morphological and functional disorders of hepatocytes and bile ducts, which is the main cause of hepatocyte dyscholia, leading to the formation of lithogenic bile and the development of biliary insufficiency. After the removal of the gallbladder, its concentration function does not eliminate these disorders, on the contrary, it contributes to their development.

Modern diagnosis and treatment of cholecystitis and gallstone disease and a number of its complications remain a problem among scientific researchers and practicing physicians. Currently, the use of surgery in cholecystitis is 15-80%. The question of when to perform a surgical procedure in this disease is a matter of much debate. Gallstone disease in most cases continues in the form of acute cholecystitis. If the inflammatory process begins acutely, it is manifested by an increase in lympho-leukocyte cells characteristic of inflammation in the layers of the gallbladder wall. This type of inflammatory infiltrate can lead to reparative regeneration, as a result of which, first of all, development of the gall bladder covering and gland epithelia is disturbed, disregenerative changes such as metaplasia and dysplasia can develop. These are precancerous changes. The etiology and pathogenesis of adenomyomatosis have not been fully studied to date. Factors leading to the disease include congenital changes, muscle dysfunction of the wall of the affected organ, hyperplastic and hypertrophic processes, and increased pressure in the gallbladder cavity.

The purpose of the study. Study of ultrasound diagnostics of gallbladder, inside and outside of the liver in gallstone disease.

Materials and research methods. The biliary system begins with bile capillaries, through which bile enters the lobular and then segmental bile ducts. Segmental ducts form the right and left hepatic ducts, which merge (merge) to form the common

hepatic duct. At the level of cystic fibrosis joining the common hepatic duct, the latter passes into the common bile duct, which drains into the duodenum. The gallbladder is a part of the extrahepatic bile ducts and is a pear-shaped reservoir with a capacity of 60-80 ml, located in the right lobe of the liver, the gallbladder passes into the bile duct (d. cysticus), the diameter of the duct is 2-3 mm, the length is 1-3 cm. Often d. cysticus lies at a slight angle from the lateral side to the common canal. In 20% of cases, it joins the common bile duct. The gallbladder duct passes in front and behind the common hepatic duct, covers it spirally, flows medially, runs parallel to the common bile duct. The mucous membrane of the gallbladder, located on the surface of the liver, contains the ducts of Lyushka, which connect the liver with the bile ducts. The average length of the common hepatic bile duct is 3 cm, and it is formed in the region of the hepatic portal due to the junction of the right and left hepatic bile ducts. The common bile duct, which is 4 to 12 cm long, begins at the junction of the gallbladder duct with the common hepatic duct. With an average diameter of 8 mm, the distal common bile duct opens into the cavity of the descending part of the duodenum in 65-80% of cases along the posterior medial contour. This part of the duct has various physiological folds depending on its relationship with the pancreas. It passes through the entire parenchyma of the gland, partially connects with its tissues or is located outside the gland and opens into the duodenum in its upper part. Four sections are distinguished in the large duodenal duct: 1) supraduodenal, 2) retroduodenal, 3) pancreatic, 4) duodenal (intramural). It contains a complex of interconnected muscle elements, the sphincter of Oddi, which plays an important role in regulation. The sphincter apparatus of the biliary system consists of several sphincters, including Mirrizzi's sphincter, distal Heister's sphincter, spiral fold of the mucous membrane and Lutken's proximal sphincter at the junction of the common hepatic duct with d. cucticus. Exography shows the bile duct and gallbladder. Bile ducts are divided into intrahepatic and extrahepatic bile ducts according to their anatomical and functional characteristics. Intrahepatic bile ducts are divided into lobular, subsegmental, segmental, and lobar types. Extrahepatic bile ducts include the common liver, common bile duct (choledoche),

and gallbladder duct. In most cases, the length of the common hepatic duct does not exceed 1.5-3 cm. The internal diameter of the gallbladder is 1-2 mm, its length is 2-6 cm.

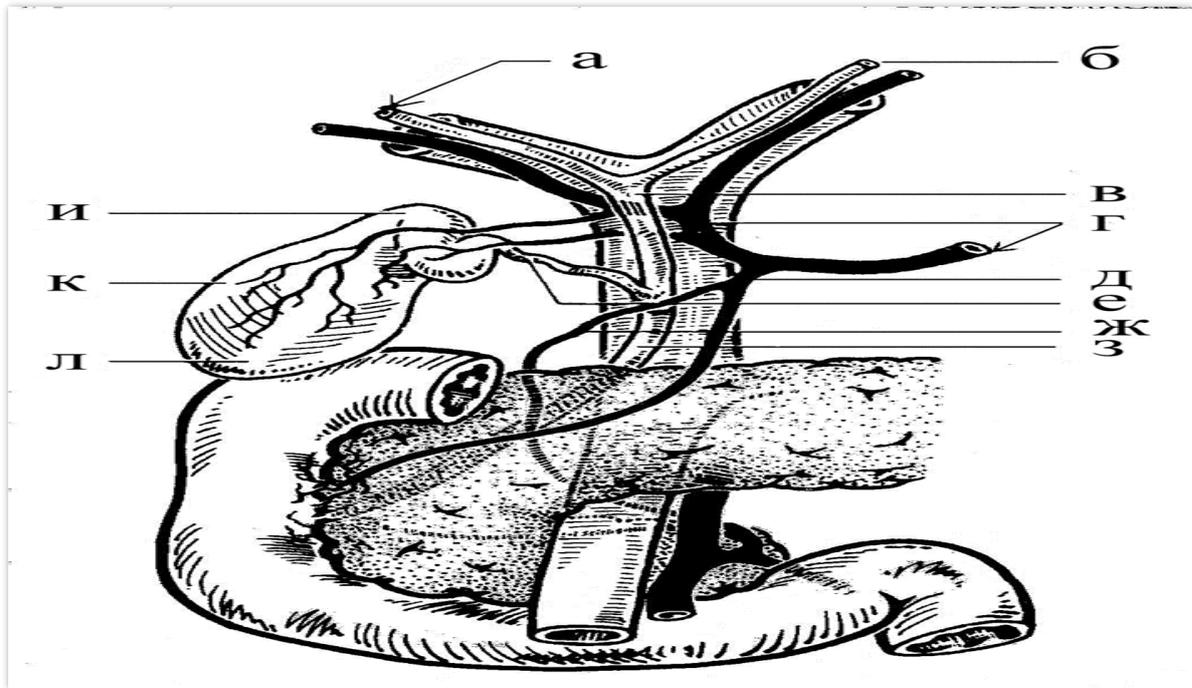


Figure-1.A-right liver tract
 B- left hepatic tract
 V – the common hepatic pathway
 Z - common bile duct (choledox)
 E- gallbladder tract
 I - gall bladder neck
 K - gallbladder body
 L – the bottom of the gall bladder

On ultrasound examination (ultrasound), the unchanged gallbladder wall is 1.5-3 mm thick and pear-shaped. The thickness of the wall of the gallbladder is not the same in all sections, because in the neck area the wall has a large visible thickness due to the difficulty of distinguishing them from the surrounding fatty tissue. The image of the shape of the gallbladder depends on the direction and level of the cut. The length of the gallbladder in adults is from 60 to 100 mm, the maximum area

does not exceed 15-18 sq. cm. In longitudinal and transverse sections, the external and internal contours of the gallbladder are clear and flat, and the cavity of the gallbladder looks homogeneous. Behind the OP image, there is a distal pseudo-enhancement effect, as is the case behind most fluid-containing structures. Twists and divisions in the cavity of the gallbladder are usually not detected, except for the neck, where there is a physiological twist. In most cases, the bile ducts are not visible due to their small diameter and location. Against the background of the portal of the liver, in cases where the bile duct can be distinguished, its sonographic image is represented by its tubular structure with thin hyperechoic walls. Of all the intrahepatic bile ducts, usually only the main lobar ducts can be seen, they are defined in front of the bifurcation of the portal vein, have high exogenous walls and have a diameter of 1 to 4 mm. The diameter of the extrahepatic bile ducts is from 4 mm to 6-8 mm, the walls appear hyperechoic, and they appear exonegative in the form of tubular structures. Ultrasound examination of the gallbladder is performed on an empty stomach, and in most patients an intact gallbladder can be easily visualized. In lean patients with a superficial location, 3.5 MHz or 5.0 MHz convex and sector sensors are seen. Impaired contraction of OP is associated with changes in hormonal regulation, direct effect of cholesterol on the smooth muscles of the gallbladder.

Through ultrasound, we characterize the shape, size, location of stones, and their mobility and acoustic shadowing when the patient's body position changes. A large number of calcium stones are more strongly reflected in the gallbladder in the form of a curved line, sometimes in the form of the phenomenon of the projection of an acoustic shadow. Gallbladder stones, which mainly contain bilirubin and cholesterol salts, appear as hyperechoic structures.

Stones with a thickness of less than 3-4 mm may not give a clear acoustic shadow, the accumulation of stones together gives an acoustic shadow. An important role in determining the shape of stones, in the correct assessment of their size. Multifaceted stones appear as one or more hyperechoic points, and due to the reflection of ultrasound rays from the sides, the acoustic shadow appears scattered.

Single stones are clearly visible in ultrasound. During the examination, it is necessary to determine the number of stones and their location, sometimes there are large stones, behind which small stones fall with a weak acoustic shadow.

When there are small stones in the common bile duct (common bile duct) and its expansion, ultrasound cannot give information, errors occur in 30% of patients with choledocholithiasis. Ultrasound diagnosis of extrahepatic biliary tract pathology gives false negative results in 13.6% of cases. Regardless of the constitutional characteristics of the patient, taking into account the quality of the obtained data, the effectiveness of computed tomography in the detection of gallstones is high.

The introduction of the ultrasound method into widespread practice has significantly improved the diagnosis of gallbladder disease, which to some extent has been one of the reasons for the "increase" in gallbladder disease. Ultrasonography for the first time made it possible to determine the size, number and, to a certain extent, the structure of stones in the gallbladder, and also revealed the early stage of the disease with changes in the echostructure of the bile. According to ultrasound data, it is possible to identify different variants of thick bile or biliary sludge (Biliary sludge) at the initial stage of bile formation. However, the frequency of microlithiasis is 76.1%, the diagnosis of the disease is sometimes difficult, and cholelithiasis is an intraoperative finding. In acute cholecystitis, the usual ultrasound image is characterized by enlargement of the gallbladder, changes in shape, thickening of the wall, stones and their acoustic shadow appear aneogenic, positive Murphy's symptom.

In our research, we found the following. 80 people of different ages, who are considered as a healthy contingent, underwent ultrasound of liver, gall bladder, and bile ducts.

Table 1

Distribution of patients by age and sex

Age	sex	common
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	male	a woman	Abs. number	%
18-30	10	18	28	35
31-40	8	12	20	25
41-50	1	8	9	11.3
51-60	5	8	13	16.3
61-70	3	6	9	11.3
71-80	-	-	-	-
Over 81	-	1	1	1.3
Total	27	53	80	100

16 out of 80 healthy contingents were diagnosed with gallstone disease, 13 of them were women, 3 were men. Age characteristics Changes in the common bile ducts, intrahepatic bile duct changes were shown, a polyp was detected in the gallbladder of one patient, enlarged common bile ducts in 1 man and 4 women (diagram-1,2).

Diagram-1

Gallstone disease was diagnosed in 80 people

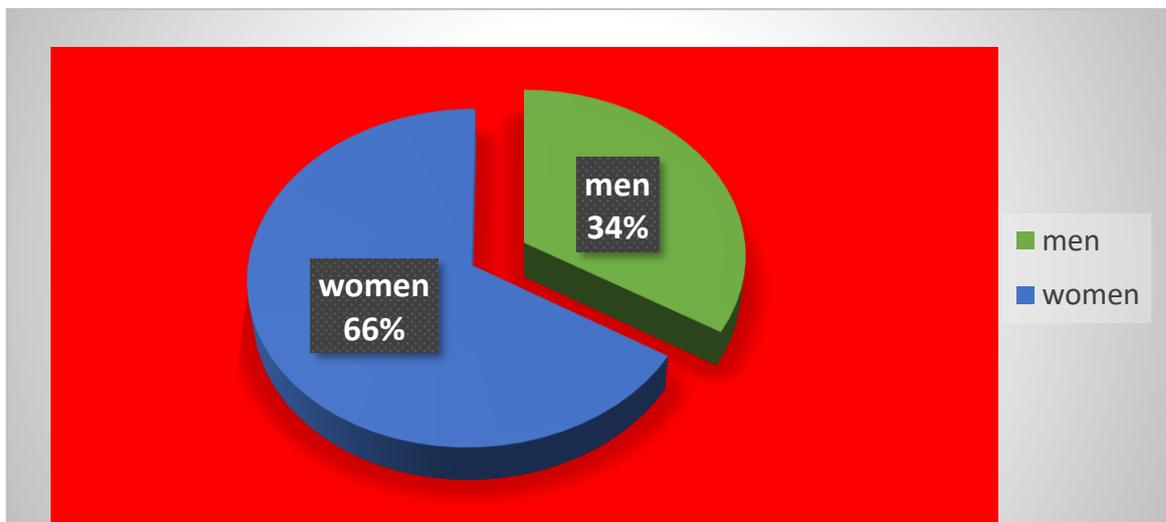
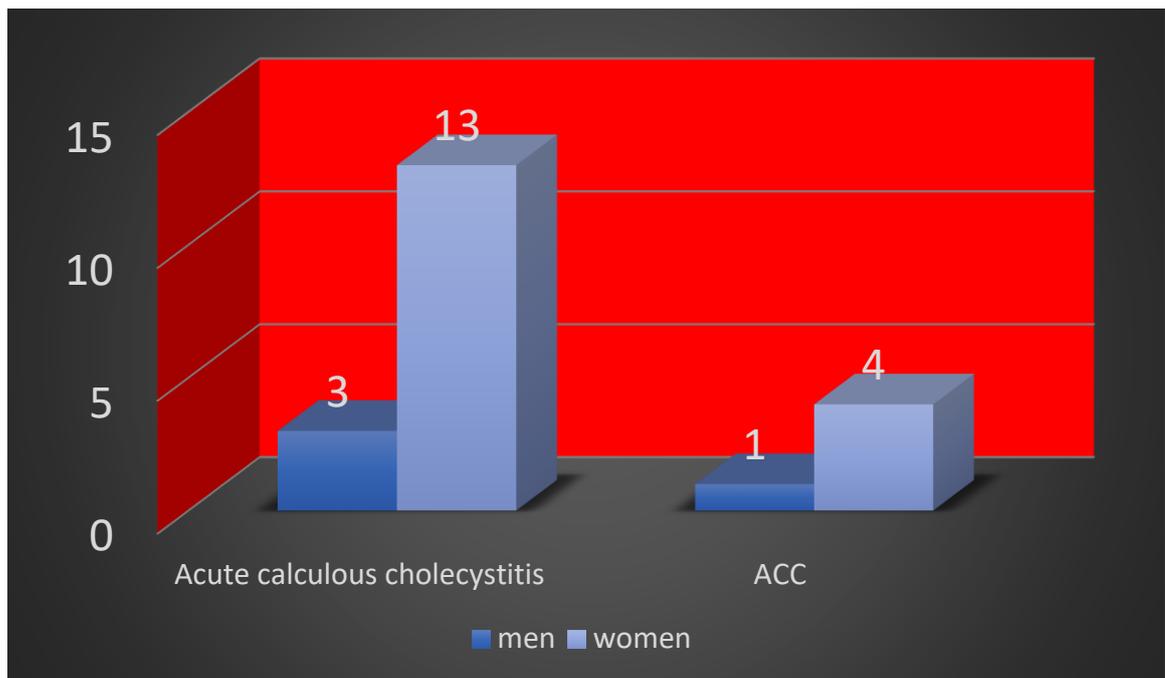


Diagram-2



Summary.1. Ultrasound examination allows to improve the diagnosis of gallstone disease, to objectify the pathology of bile ducts inside and outside the liver, to provide urgent surgical instructions, and thus to reduce the number of "forced" interventions.

2. The results of clinical and anamnestic analysis showed that among chronic cholecystitis in cholelithiasis, dysregenerative changes with a pre-tumor process were detected. In the gender distribution of the studied materials, the majority were women, totaling 66%. Overweight in women, as well as smoking and gastrointestinal diseases in men, were found to be dominant risk factors.

3. Ultrasound examination method makes it possible to diagnose acute cholecystitis with high confidence and to objectively evaluate the morphological changes in the wall of the gallbladder, its composition and the nature of perivesical tissue.

4. The sequence of acute cholecystitis, i.e. catarrhal, fibrinous and calculous types, which are considered pathomorphologically basic in diagnosis, it is recommended to take into account the changes that occur in various morphological forms of gallstone disease.

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Literature

1. Alijanov A.A., Iskhakov B.R., Iskhakov I.R. 20-year experience of laparoscopic cholecystectomy in patients with acute calculous cholecystitis in the Namangan branch of RNTsEMP // Vestnik emergency medicine. - 2021. - volume 14, #4 - S.52-56/
2. Altyev B.K., Rakhimov O.U., Asamov Kh.Kh. Diagnostics and treatment of intra-abdominal oslojnenii and chirurgii jelchnyx putey // Vestnik ekstremoy meditsiny. -2012.- No. 4 – S. 73-78.
3. Akhmedov F.Kh., Zhumayeva M.M. Ultrasound in gallstone disease, Acute Calculous Cholecystitis, Patient Selection for Lhe, Bile Duct Change Before and After Surgery //Central Asian Journal Of Medical And Natural Sciences- 2022.- V.3 . – No.3.- C-322-324. <https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/788//>.
4. Akhmedov F. Kh. 2. Jumayeva M. M. Comparative Morphometry of the Intra-And Extrahepatic Biliary Tracts, Bile Sphincters in Patients with GSD Undergoing Classical and Laparoscopic Cholecystectomy //research journal of trauma and disability studies// 2022.- page 231 -241.
5. Akhmedov F. Kh., Jumayeva M. M. Morphological changes in cholelithiasis // eurasian journal of medical and natural sciences- ISSN

2181-287X- 2 (12) 2022. - C - 274-283.

<https://doi.org/10.5281/zenodo.7381138>

6. Akhmedov F. Kh., Jumaeva M. M. Ultrasound Comparative Morphometry in Patients with Conventional Cholecystectomy//Journal of Natural and Medical Education. -2023.- Volume 2, Issue 3. ISSN: 2835-303X. –P. 168-173.
7. Akhmedov F. Kh., Jumayeva M. M. Ultrasound Diagnosis of the Gallbladder in Gallstone Disease // amaliy va tibbiyot fanlari ilmiy jurnali - ISSN: 2181-3464.-1(7). -2022.-B.-15-21.
8. Akhmedov F. Kh., Jumayeva M. M. Comparative Morphometry of the Intra- and Extrahepatic Biliary Tracts and Biliary Sphincters in Patients with GSD // amaliy va tibbiyot fanlari ilmiy jurnali - issn: 2181-3464.-1(7). -2022.-B.-22-27.
9. Akhedov F. Kh., Jumaeva N. Kh. Jumaeva M.M. comparative morphometry of the biliary tracts and bile sphincters in patients with gsd undergoing classical and laparoscopic cholecystectomy. // Uzbek Scholar Journal- (<https://uzbekscholar.com/index.php/uzs/article/view/466>)
10. Akhmedov F.Kh., Jumayeva M.M. Billiary Sludge // Research Journal of Trauma and Disability Studies- ISSN: 2720-6866.-1(12). -2022.-S.-73-82.
11. Akhmedov F. Kh., Jumaeva M. M. Ultrasound Comparative Morphometry in Patients with Conventional Cholecystectomy//Journal of Natural and Medical Education. -2023.- Volume 2, Issue 3. ISSN: 2835-303X. -P. 168-173.
13. Akhmedov F. Kh., Jumaeva M. M. Ultrasound Comparative Morphometry of Intra- And Extrahepatic Bile Ducts after Laparoscopic Cholecystectomy // Journal of Natural and Medical Education. -2023.- Volume 2, Issue 3. ISSN: 2835-303X. - P. 174-179.
13. Jumayeva M. M. Ot Tosh Kasalligida Ut Kopi Devorining Morphological Va Gistokimyoviy Ozgarishlar //AMALIY VA TIBBIYOT FANLARI ILMIY JURNALI.- 2023.- Jild: 02 Nashr: 04.-B.-1-4.
14. Jumaeva M. M. Informativeness of Ultrasound in the Diagnosis of Changes in the Wall of the Gallbladder in Cholecystitis// CENTRAL ASIAN JOURNAL OF

MEDICAL AND NATURAL SCIENCE Vol 4 No 3 (2023): CAJMNS ISSN:2660-4159 –P. 657-660. <http://cajmns.centralasianstudies.org>

15. Jumayeva M.M. Histochemical method for diagnostics of destructive forms of acute cholecystitis// central asian journal of medical and natural science vol 4 no 3 (2023): cajmns issn:2660-4159 –p. 670-673. <http://cajmns.centralasianstudies.org>