

Ultrasound and Morphological Examination of the Walls of the Gallbladder

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Abstract: The use of echography allows you to make the correct diagnosis as soon as possible, determine the subsequent treatment tactics, and start conservative or surgical treatment in a timely manner. The advantages of ultrasound examination over X-ray cholecystography are shown, the features of echograms in various diseases of the gallbladder are considered. The prevalence of cholelithiasis (GSD) is steadily growing and occupies a leading position among pathologies requiring surgical treatment. Currently, due to the widespread introduction of the ultrasound research method into practical activities, new opportunities have emerged for objective assessment of the degree of inflammatory changes in the wall of the gallbladder and perivesical space.

Keywords: Ultrasound, morphology, cholecystitis, gallbladder, biliary tract.

Annotation. Inflammatory diseases of the gallbladder as a complication of cholecystitis remain the most common diseases in the world. In recent years, the number of patients with acute cholecystitis has doubled in many countries[1]. According to local and foreign researchers, this is due to changes in living conditions, dietary patterns in different social groups, increased psycho-emotional stress, physical inactivity, and improved diagnosis of gall bladder diseases [2]. Pathology of the biliary tract occupies one of the central places in modern gastroenterology due to the prevalence of functional and organic diseases of the gallbladder and biliary tract. Gallbladder diseases are reported in 5-10% of patients in general medical hospitals. Every year, about one million people are hospitalized with a diagnosis of chronic cholecystitis. [3–4]. Diseases of the biliary tract are often found as part of diseases of the digestive system. Due to the high morbidity of people of working age, the presence of life-threatening complications, as well as the high costs of treatment, diseases of the biliary tract are not only an urgent problem of gastroenterology, but also an important socio-economic problem. Despite the progress made in the study of the etiology, diagnosis and treatment of gallbladder diseases in recent years, this pathology remains the focus of attention of researchers. The course of gall bladder diseases, both functional and organic, is mainly determined by the characteristics of the nutritional status of patients. Acute cholecystitis Abdominal organs make up the majority of surgical cases, second only to appendicitis in terms of frequency [6]. According to a number of authors, cholecystitis is one of the most common diseases of the gallbladder, characterized by inflammation of the gallbladder walls and the formation of stones in the gallbladder. According to modern epidemiological data, cholecystitis affects 17 to 20 percent of the adult population of the planet, mainly women. Inflammation and destruction of the walls of the gallbladder, observed on the background of cholecystitis, leads to the gradual loss of the normal function of this organ and disruption of the digestive process.

The purpose of the study. Study of morphofunctional and histological changes of gallbladder walls in cholecystitis.

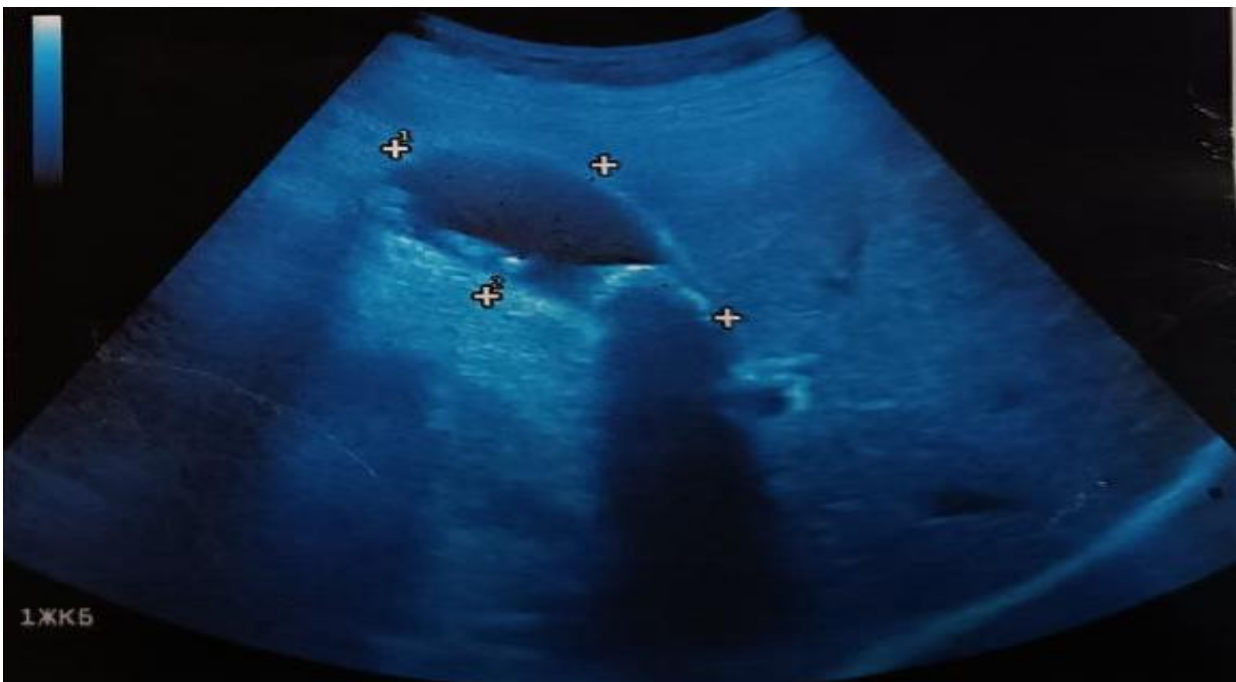
Materials and research methods. Patients were admitted or referred to another hospital based on diagnosis obtained from abdominal ultrasonography, blood test results, clinical findings, or diagnostic imaging after abdominal ultrasonography.

Research results. Acute cholangitis is defined as inflammation caused by obstruction of the bile ducts. Abdominal ultrasound findings include evidence of bile duct dilatation and etiology such as strictures, stones, or stents. Acute cholecystitis is diagnosed with a combination of local and systemic signs of inflammation[4].. Abdominal ultrasound confirmed the diagnosis, revealed abdominal swelling,

thickening of the walls, and mud in the gallbladder. The introduction of the ultrasound method into widespread practice has significantly improved the diagnosis of gallbladder pathology. Dynamic ultrasound examination made it possible to determine the thickness of the walls of the gallbladder and the presence of its deformation, to accurately determine the size, number and, to a certain extent, the structure of stones in the gallbladder. It also made it possible to determine the initial stages of stone formation based on changes in the bile fluid exostructure [7].



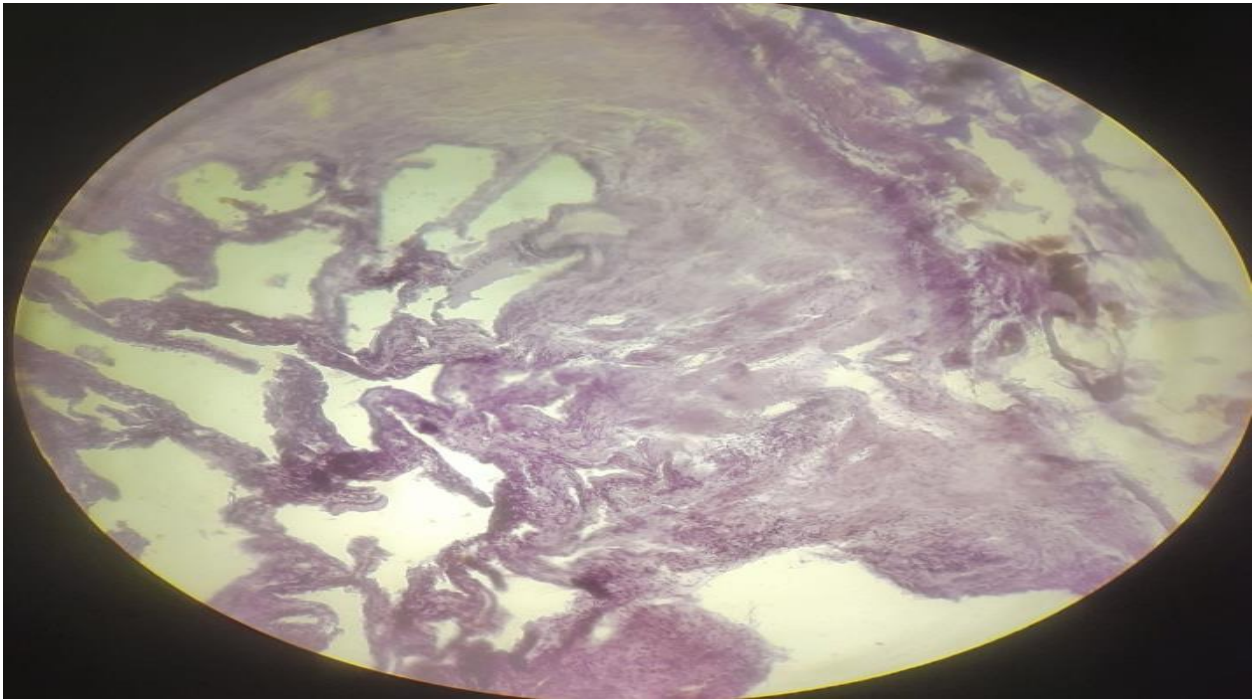
Picture-1. Gallstone disease. stony cholecystitis.



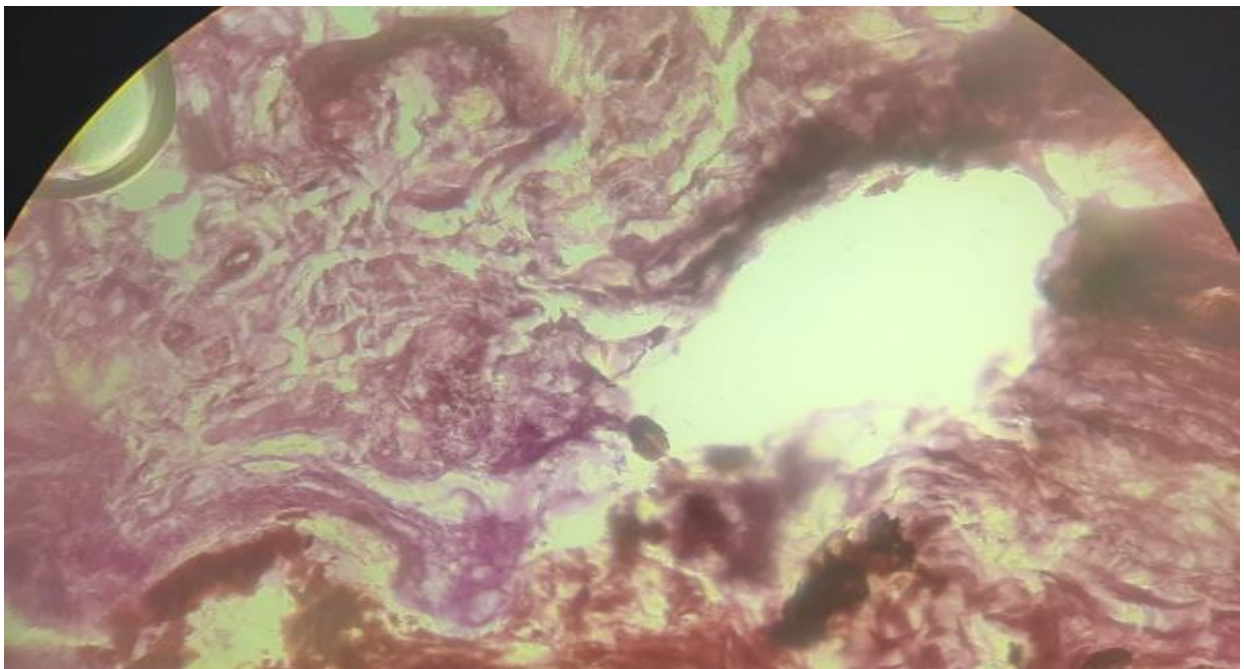
Picture-2. Gallstone disease. stony cholecystitis.

However, the possibilities of the method, unfortunately, are not fully used in practice. Thus, the condition of the mucous membrane and smooth muscles of the gallbladder is indirectly assessed by the thickness of its entire wall [8-9]. Diffuse thickening of the gallbladder wall is characteristic especially although it is not a sign, it is observed in many pathological processes. According to the results of the investigation, the incidence of acute cholecystitis in people aged 18 to 65 years is 6.7%-14.6%. Risk factors for the development of this disease include age, gender, existing liver diseases, excess body

weight, hypercholesterolemia, lack of movement and diabetes, and smoking. Gallstone disease in most cases continues in the form of acute cholecystitis[15].



Picture-3. When cut, the gall bladder is 7x3 cm pink in color, with a thin wall and reddened inner surface. Phlegmonous cholecystitis



Picture-4. When cut, the gall bladder is 6x8 cm pink in color, with a thin wall and reddened inner surface. Phlegmonous 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. Chronic cholecystitis and gallstone disease are among the most common diseases. According to the results of extensive epidemiological studies conducted in recent years, this disease is 10-15% of the working population in developed countries.

Summary. Abdominal ultrasound was suitable for diagnosing patients with abdominal symptoms. Control of the functioning of the bile ducts, as well as other body systems, is based on a multilevel regulation. Undoubtedly, surgical interventions lead to significant changes in the working mechanisms of this system. Experimental and clinical observations show that the removal of a functioning gallbladder leads to disruption of the sphincter apparatus of the biliary tract, since the gallbladder is the coordinator of its activity. Different forms of acute cholecystitis have their own echographic features of the gallbladder wall. In catarrhal cholecystitis, the wall thickness is 3-4 mm, two-layered, the outer layer is hyperechoic, and the inner layer is hypoechoic. There is blood flow in the cystic artery. In phlegmonous cholecystitis, the wall thickness is 4-6 mm, 3 layers, inner and outer layers are hyperechoic, and there is a hypoechoic layer between them.

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