



STUDY OF THE MORPHOLOGICAL CHANGE OF THE GALL BLADDER IN GALL STONE DISEASE.

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Article History

Volume 6, Issue Si3, 2024

Received: 10 May 2024

Accepted : 21 Jun 2024

doi:10.48047/AFJBS.6.Si3.2024. 1564-1574

Summary. 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.

Keywords: *Ultrasound, cholecystitis, gallbladder, biliary tract, cholelithiasis*

Cholecystitis is an inflammation of the gallbladder, which is accompanied by a violation of its motor function and in some cases the formation of stones. Clinically, it is manifested as pain under the right rib, often occurs after eating fatty foods and alcohol, nausea, vomiting, dry mouth and bitterness. Informative methods for diagnosing chronic cholecystitis include biochemical blood tests,

ultrasound examination of the gallbladder, cholecystography, and duodenal intubation.

According to a number of authors, chronic cholecystitis often develops in women over 40 years old, mainly among those who are obese. The disease is recorded in 10% of the entire adult population, and in most cases it occurs due to the presence of gallstones. The calculous form of cholecystitis is more common among men.

The purpose of the study. Study of morphological changes of the gallbladder wall in cholecystitis.

Materials and research methods. Comparison of morphometric measurements of bile ducts and biliary sphincters using ultrasound and laboratory analyzes in different forms of cholecystitis. Ultrasound devices Mindray 6600, EsaoteMylab 40.

Results and discussion. Acute purulent cholecystitis often develops in the presence of gallstones. The gallbladder is enlarged, tense, its serous membrane is blurred, covered with fibrin. Gallbladder cavity contained exudate mixed with pus, bile and blood. In acute purulent cholecystitis, the inflammatory process often occurred in the form of inflammation observed in phlegmonous cholecystitis, where areas of necrosis and tissue dissolution were found in the thickened wall of the gallbladder. The mucous membrane is congested, swollen, bleeding, covered with ulcers. Inflammation with bleeding in the wall of the gallbladder has a purulent-hemorrhagic nature.

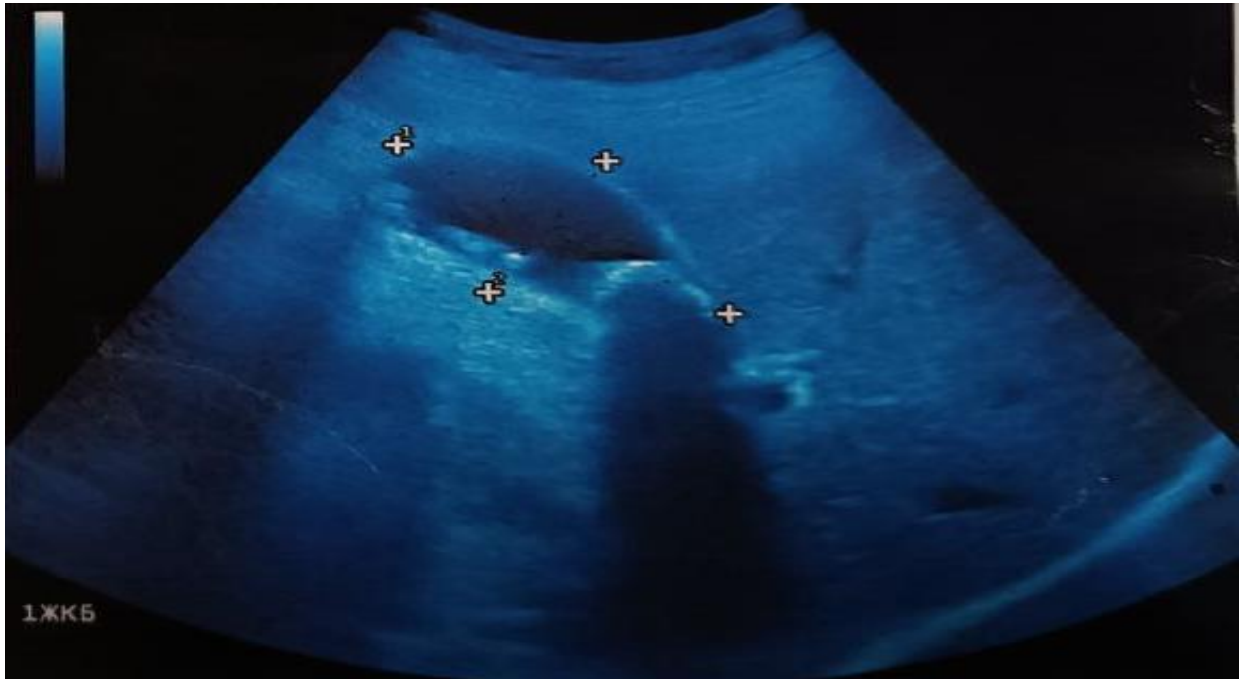
Significant changes can be seen in the microscopic appearance of the gallbladder after laparoscopic cholecystectomy of a patient with acute calculous cholecystitis.

First, there is desquamation of the mucosal epithelium and the presence of a clear inflammatory infiltrate, which indicates an acute inflammatory process.

Secondly, there is fullness of the vessels of the private plate of the mucous membrane, as well as inflammatory infiltrates, which indicates a violation of microcirculation and the intensity of the inflammatory reaction.

The third important aspect is the change of the muscle-fiber layer, where hypertrophy of muscle fibers, swelling, and the presence of inflammatory changes are noted.

Finally, swelling, inflammation, hypertrophy and hemorrhage are detected in the connective layers of the muscle-fibrous layer, which indicates the presence of a clear pathological process.



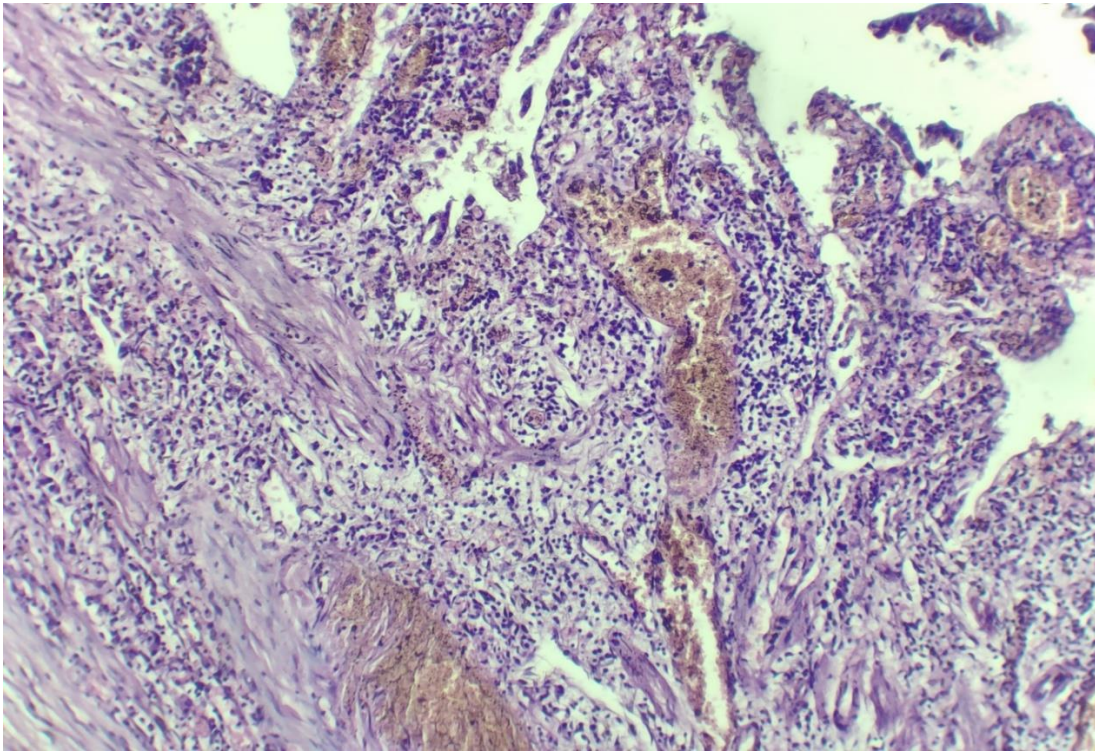
Gallstone disease. stony cholecystitis.

Acute purulent cholecystitis often develops in the presence of gallstones. (Picture 1) The gallbladder is enlarged, tense, its serous membrane is blurred, covered with fibrin. Gallbladder cavity contained exudate mixed with pus, bile and blood.

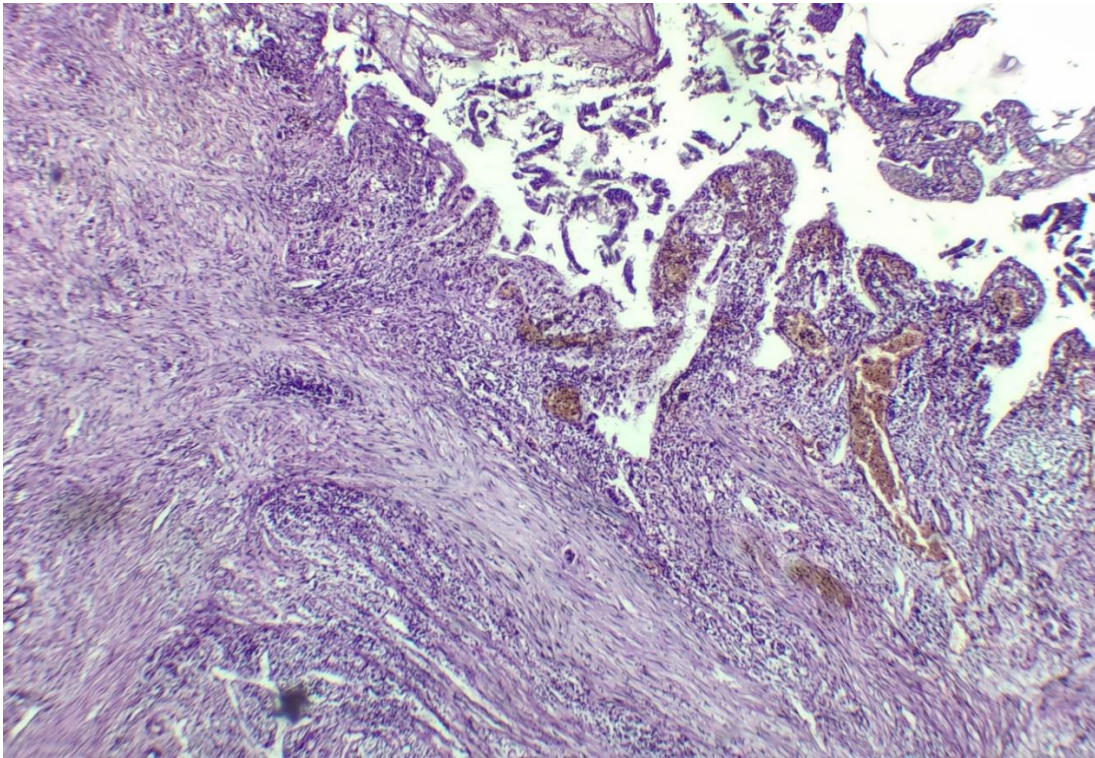


Gallstone disease. stony cholecystitis.

In acute purulent cholecystitis, the inflammatory process often occurred in the form of inflammation observed in phlegmonous cholecystitis, where areas of necrosis and tissue dissolution were found in the thickened wall of the gallbladder. The mucous membrane is congested, swollen, bleeding, covered with ulcers. Inflammation with bleeding in the wall of the gallbladder has a purulent-hemorrhagic nature.



Picture 1. Microscopic view of the gallbladder after laparoscopic cholecystectomy in a patient with acute suppurative cholecystitis. Magnified 10x20 stained with hematoxylin-eosin. 1- inflammatory process consisting of macrophages; 2nd muscle layer hypertrophy; 3- hypertrophy of the mucous membrane of the gallbladder.



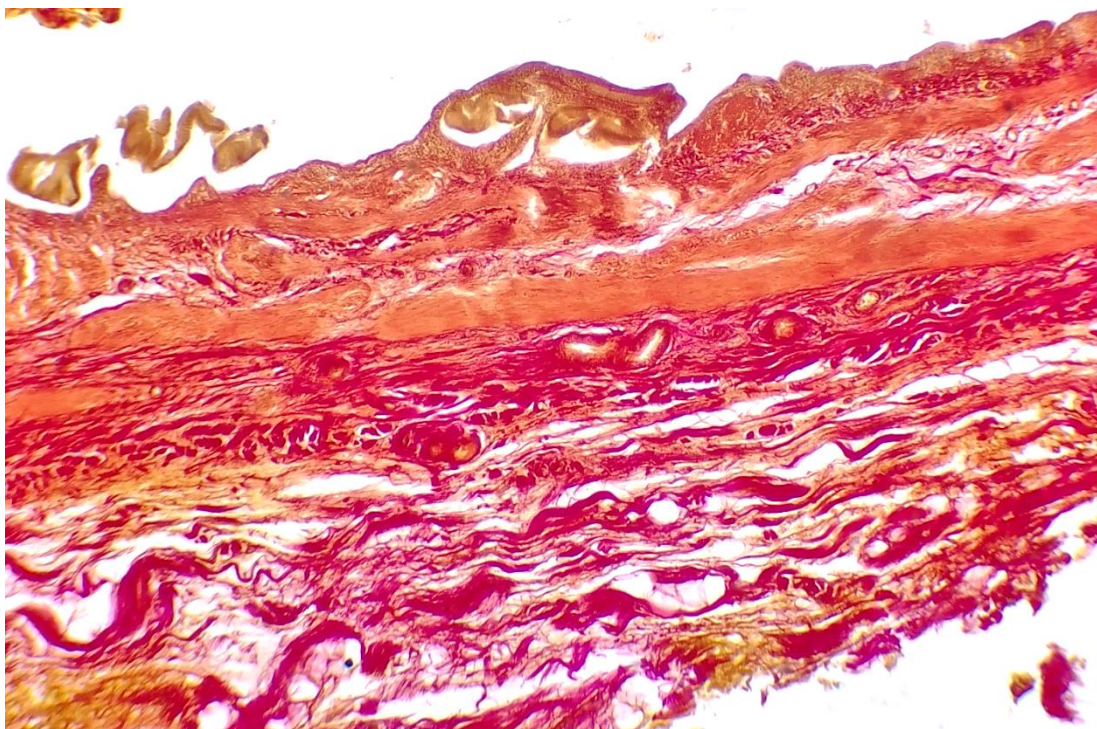
Picture 2. Microscopic view of the gallbladder after laparoscopic cholecystectomy in a patient with acute calculous cholecystitis. Magnified 10x20 stained with hematoxylin-eosin. 1- hypertrophy of the mucous membrane of the gallbladder; 2nd muscle layer hypertrophy; 3- ectopy of liver tissue among gallbladder tissues; 4- gall bladder hyperplasia

These changes in the microscopic image of the gallbladder after cholecystectomy in a patient with acute purulent cholecystitis are characteristic of this disease and may be fundamental in determining the diagnosis and subsequent treatment tactics.



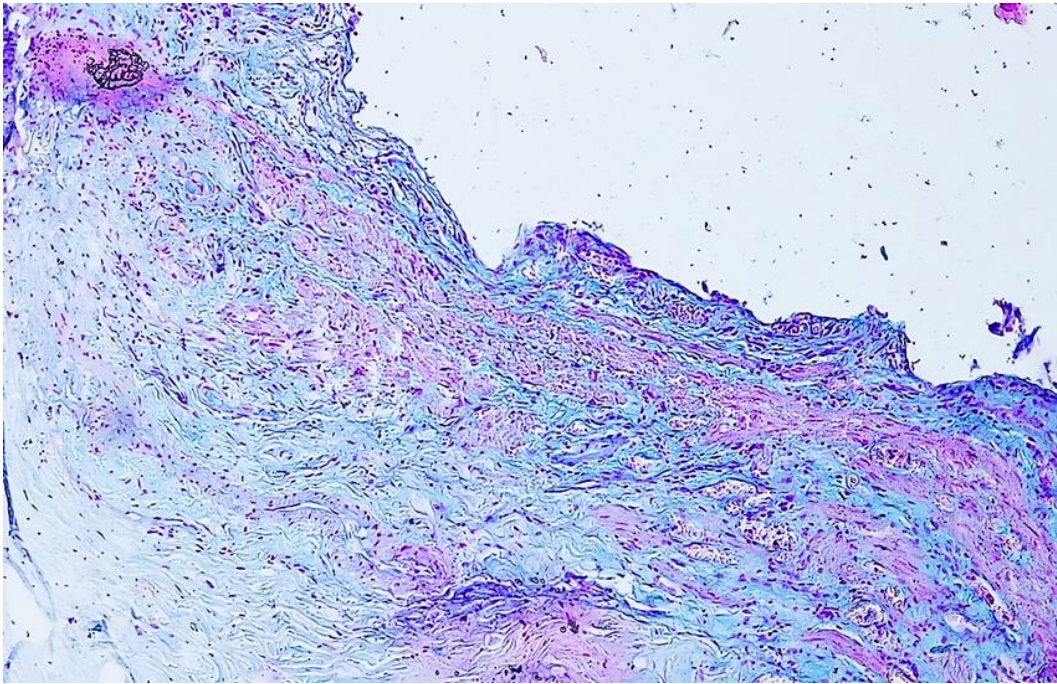
Figure 3 A. Macroscopic view of the gallbladder after laparoscopic cholecystectomy in a patient with acute calculous cholecystitis. The length of the gall bladder is 14.9 cm, the width is 7.9 cm. The thickness of the wall was 1.5 cm.

There is hypertrophy of the mucous membrane of the gallbladder, which indicates its reactive change in response to the inflammatory process. This is manifested as a thickening of the gallbladder walls and an increase in the number of mucous membrane cells.



Picture 4. Microscopic view of the gallbladder after laparoscopic cholecystectomy in a patient with acute calculous cholecystitis. Magnified 10x20 painted by Van Gieson. 1-gall bladder mucosa; 2- Hypertrophy of muscle fibers swelling; 3- Strong fibrosis process (connective tissue stained red)

Hypertrophy of muscle fibers, swelling: These changes can be the result of an inflammatory process or surgical intervention. Strong fibrosis: the presence of strong fibrosis, with connective tissue stained red, may indicate significant changes in the gallbladder tissue. The process of fibrosis is usually a reaction to various injuries or inflammatory processes.



Picture 5. Microscopic view of the gallbladder after laparoscopic cholecystectomy in a patient with acute calculous cholecystitis. Enlarged 4x10 painted in Altsian blue. 1. hypertrophy of the mucous membrane of the gall bladder and blue staining of the "mucus" i.e. mucin.

A microscopic view of the gallbladder after laparoscopic cholecystectomy shows hypertrophy of the mucous membrane and the blue color of "mucus" due to the presence of mucin in it. Hypersecretion of the mucous membrane of the inflamed gallbladder can be expressed by an excess of mucous fluid, which is a reaction to the inflammatory process. Altsian blue dye plays an important role in the study of the structure and function of the gallbladder. This allows to stain and "capture" the mucin located in the fibrotic tissue, which is probably formed in response to a strong inflammatory process of an autoimmune nature. We found that Altsian blue staining can be used to diagnose calculous cholecystitis caused by inflammation of an autoimmune nature. Based on this, we can say that in the microscopic view of the gallbladder after laparoscopic cholecystectomy and Van Gieson staining of a patient with acute calculous cholecystitis, we can see how much connective tissue has occupied the gallbladder and the process has become an irreversible process. This tells us that the process of fibrosis has begun, that is, this process indicates the final stage of calculous cholecystitis. Therefore,

according to Van-Gieson, we can use the staining of micropreparations in the diagnosis of the non-layered process in the gallbladder and in the diagnosis of the last stage of cholecystitis.

Conclusions: The general conclusion is that the microscopic examination of the gallbladder after laparoscopic cholecystectomy in patients with acute calculous cholecystitis using different staining methods (Van Gison, Schiff and Altzian blue) reveals various changes in the gallbladder tissue related to inflammatory processes, hypertrophy, and fibrosis.

The use of Van Giesson dye allows to identify collagen fibers and to study the reversibility of the process in the gallbladder. Staining with Schiff's reagent helps to identify 3 types of collagen, which mainly contain small amounts of glycosaminoglycans, which give elasticity to connective tissues. The presence of type 3 collagen in the tissue of the gallbladder indicates that it loses its dense consistency and good peristalsis, which is the reason for the dampness of the bile and the development of gallstone disease. Altsian blue dye, which allows mucin to be stained blue, revealed that large amounts of mucin were produced in the gallbladder due to a strong inflammatory response in response to an autoimmune process. This type of calculus made it possible to determine the autoimmune cause of the development of cholecystitis. These staining methods play an important role in the diagnosis and study of the state of the gallbladder, revealing the effects of inflammatory processes and pathomorphologies such as fibrosis, autoimmune inflammation. We conclude that the combined use of different staining methods for microscopic analysis will be useful for determining the degree and nature of changes in the gallbladder tissue in various diseases.

Acknowledgments.

The authors are grateful for the support and helpful comments provided by the Department of Oncology and Medical Radiology of the Bukhara State Medical Institute, the Bukhara branch of the Republican Scientific Center for Emergency Medical Care, as well as other experts consulted during this process.

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