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Assessment of Ultrasound Effectiveness for the Diagnostics of Common Bile Duct Diseases Complicated by Obstructive Jaundice

Professor **Boyko V. V.**[1,2], Professor **Avdosyev Yu. V.**[2], Postgraduate Student **Sochnieva A. L.**[1], Professor **Yevtushenko D. O.**[1]
[1] *Kharkiv National Medical University, Ukraine*
[2] *State Institution "Zaycev V. T. Institute of General and Urgent Surgery of the National Academy of Medical Sciences of Ukraine", Ukraine*

Abstract
Background:
Ultrasound is the first-priority screening test in the diagnostics of common bile duct diseases that enables the differentiation of jaundice genesis and determination of indications and contraindications for further non-invasive and invasive tests.
The aim of research is to determine the effectiveness of ultrasound for the diagnostics of common bile duct diseases complicated by obstructive jaundice (OJ).

Methods:
For the period from 2011 to 2017, 118 patients with benign and malignant common bile duct diseases complicated by obstructive jaundice received in-patient treatment at the facilities of the Department of Surgery No. 1 of Kharkiv National Medical University at the clinic of State Institution "Zaycev V. T. Institute of General and Urgent Surgery of the National Academy of Medical Sciences of Ukraine".

Results:
The sensitivity of ultrasound as OJ indicator was 74.3%. During ultrasound, various signs of common bile duct diseases were found that were combined in several cases: high obstruction of bile ducts in 50 (67.6%) patients; low obstruction in 24 (32.4%); dilated common bile duct in 60 (81.1%), dilated intrahepatic segmental and lobar hepatic ducts in 68 (91.9%); dilated common bile duct walls in 28 (37.8%), acoustic shadows in the common bile duct in 32 (43.2%), organic hepatic changes in 38 (51.3%) patients. No signs of bile duct damage were found in 10 (13.5%) cases. In 74.3% (55 patients), ultrasound was sufficient for establishing the correct clinical diagnosis. It was mostly the case for obstructive jaundice of benign etiology (33.7% of correct diagnoses), for obstructive jaundice of malignant etiology in 39.1% of cases, taking into account that there were three times as many patients with malignant tumors as with benign ones. Calculi in the common bile duct were found in 17 cases (23% patient), in the gall bladder in 16.2% (12 cases). Common bile duct strictures were found using ultrasound in 4 (5.4%) patients. Biliodigestive anastomoses strictures were found in 3 (4.05%) patients. 10 (13.5%) false negative and 6 (8.1%) false positive results were found in patients with obstructive jaundice. In obstructive jaundice with cicatricial-inflammatory common bile duct strictures, there were 2 (2.7%) false negative and 3 (4.05%) false positive results. The low level of stricture diagnoses was due to the impossibility of common bile duct examination all along its way (more than 4 cm). Ultrasound precision for the identification of common bile duct tumors was 79.7%. It points to the insufficient informative power of this method for the identification of obstructive cholestasis of tumor nature. 30 (40.5%) patients with cholangiocarcinomas were identified following ultrasound. Ultrasound was non-informative in 15 (20.25%) cases of cholangiocarcinoma identification. In patients with cholangiocarcinomas of different localization, there were 4 (5.4%) false positive and 15 (20.3%) false negative results. The diagnostic value of ultrasound for the identification of cholangiocarcinomas is unsatisfactory.

Conclusions:
Following the analysis of ultrasound use in the diagnostics of obstructive jaundice complicating common bile duct diseases, it can be stated that ultrasound is an obligatory non-invasive, generally available and cheap examination technique at the stage of differential diagnostics of biliary hypertension. However, ultrasound cannot be used in isolation as the only diagnostic technique (strength of recommendation 3B). Ultrasound is a technique of choice in the diagnostics of obstructive jaundice with benign etiology. It also helps establish or exclude the obstructive genesis of jaundice – absence of bile duct dilation at any level regardless of hepatic function.

Information about the authors:
Boyko Valeriy Vladimirovich – Doctor of Medical Sciences, Professor, Head of the Surgery Department No. 1, Kharkiv National Medical University; Director, Zaycev Institute of General and Urgent Surgery of the National Academy of Medical Sciences of Ukraine, Kharkiv, Ukraine.
Research interests: surgery, education, medical science; http://orcid.org/0000-0002-3455-9705.
Avdosyev Yuriy Vladimirovich – Doctor of Medical Sciences, Professor, Head of the Department of Intervention Radiology, Zaycev Institute of General and Urgent Surgery of the National Academy of Medical Sciences of Ukraine, Kharkiv, Ukraine.
Research interests: surgery, education, medical science; https://orcid.org/0000-0002-2677-4464.
Sochnieva Anastasiia Lvovna – Postgraduate Student, Kharkiv National Medical University, Ukraine.
Research interests: surgery, education, medical science; https://orcid.org/0000-0003-0106-5247.
Yevtushenko Denys Oleksandrovych – Doctor of Medical Sciences, Professor of the Department of Surgery No. 1, Kharkiv National Medical University, Ukraine.
Research interests: surgery, education, medical sciences; https://orcid.org/0000-0003-1941-7183.
Corresponding Author:
Yevtushenko Denys Oleksandrovych
Corresponding Author's Email:
dr.yevtushenko@ukr.net