

Modern Approaches To Imaging And Liver Function Assessment In Biliary Obstruction

Nurmurzayev Zafar Narbay ugli
Samarkand State Medical University

Relevance. Obstructive jaundice remains one of the most significant challenges in modern abdominal surgery, being accompanied by progressive impairment of bile outflow, toxic hepatocellular injury, and the development of hepatic failure. Early and accurate diagnosis of the level and cause of biliary obstruction determines the timeliness and effectiveness of treatment, reducing mortality and postoperative complications. Modern radiological methods — ultrasound (US), multislice computed tomography (MSCT), magnetic resonance cholangiopancreatography (MRCP), and endoscopic retrograde cholangiopancreatography (ERCP) — allow noninvasive and highly informative assessment of both anatomical and functional changes in the biliary system and liver parenchyma, making them indispensable tools in comprehensive diagnosis.

Aim of the study. To determine the diagnostic value of various radiological imaging methods in identifying the level and cause of biliary obstruction, and to assess their role in evaluating the degree of hepatic functional impairment in patients with obstructive jaundice.

Materials and Methods. The study included 424 patients who underwent examination and treatment for obstructive jaundice of various origins at the Samarkand State Medical University clinic from 2016 to 2024. All patients received a comprehensive radiological examination, including abdominal ultrasound, contrast-enhanced MSCT, MRCP, and, when necessary, ERCP. Biochemical liver function tests (total and direct bilirubin, ALT, AST, ALP) were analyzed and correlated with imaging findings. Statistical processing was performed to assess diagnostic accuracy and the correlation between radiological and biochemical indicators.

Results and Discussion. Ultrasound revealed intrahepatic bile duct dilation in 89.2% of cases and suggested the level of obstruction in 76.5%. MRCP and MSCT provided precise identification of the cause and location of obstruction in 94.8% of cases. The most common etiological factors were choledocholithiasis (47.4%), pancreatic head tumors (21.2%), cholangiocarcinoma (15.1%), and post-inflammatory strictures (10.8%). A significant correlation was found between the degree of hyperbilirubinemia and bile duct dilation ($r = 0.78$; $p < 0.01$). The combined use of radiological methods significantly reduced diagnostic time, improved preoperative planning accuracy, and decreased the number of diagnostic errors.

Conclusion. Radiological imaging plays a crucial role in diagnosing obstructive jaundice, enabling early detection, precise determination of the level and cause of obstruction, and objective evaluation of hepatic function. The combined application of US, MSCT, and MRCP enhances diagnostic accuracy, facilitates optimal therapeutic decision-making, and improves outcomes for patients with this complex condition.