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CLINICAL SIGNIFICANCE OF NON-INVASIVE DIAGNOSTIC METHODS IN THE MONITORING OF DRUG-INDUCED LIVER INJURY

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Abstract
This article highlights the clinical significance of modern non-invasive diagnostic methods in the diagnosis and monitoring of Drug-Induced Liver Injury (DILI). It analyzes the role of transient elastography and serum biomarkers (specifically, humoral factors) in the early detection of hepatotoxicity developing against the background of polypharmacy, and in the assessment of necroinflammatory and fibrotic processes. The main focus is on diagnostic algorithms that provide a s1.afe and dynamic monitoring alternative to liver biopsy.

Keywords: drug-induced liver injury, DILI, non-invasive diagnostics, elastometry, biomarkers, humoral factors, hepatotoxicity, liver fibrosis, propaedeutics of internal diseases.

Introduction

Today, due to polypharmacy and the uncontrolled intake of over-the-counter medications and biologically active dietary supplements (BADs), drug-induced liver injury (DILI) is increasingly encountered in clinical practice. DILI has become one of the most pressing problems in the internal medicine clinic, not only as one of the main causes of acute liver failure but also due to the risk of progression to chronic hepatitis and cirrhosis.

For a long time, puncture liver biopsy has been considered the "gold standard" in the diagnosis of DILI and the assessment of changes in the liver parenchyma. However, due to the invasiveness of this method, the risk of complications, and its inconvenience for repeated monitoring, a paradigm shift toward non-invasive testing (NITs) is being observed in modern hepatology.

In the early stages of drug-induced liver injury, simple and inexpensive laboratory biomarkers are used to assess the pathological process. The levels of transaminases (ALT, AST), alkaline phosphatase (ALP), and total bilirubin allow for the differentiation of hepatocellular, cholestatic, or mixed types of injury based on the R-value criteria.

At the same time, monitoring immunological and humoral changes in the blood is of great importance in liver injuries. In the scientific research of our local scientists, particularly Sh.Ya. Zakirkhodjaev

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and M.Kh. Pattakhova, the specific features of humoral factors and their pathogenetic role in patients with liver diseases have been deeply elucidated [1]. These studies serve as an important clinical foundation for understanding the involvement of humoral immunity in the inflammatory and necrotic processes occurring against the background of hepatotoxicity, as well as for the early detection of latent injuries. Furthermore, the works of M.Kh. Pattakhova specifically dedicated to drug-induced injuries also help to improve propaedeutic approaches in this direction [2].

To assess fibrosis developing as a result of DILI, non-invasive indices such as FIB-4 and APRI are widely used as primary screening tools. These indices help rule out the risk of severe fibrosis even in an outpatient setting by using the patient's age and basic blood tests.

In the monitoring of DILI, instrumental non-invasive methods, specifically transient elastography (FibroScan), have brought about revolutionary changes. In patients taking hepatotoxic drugs for a long time (for example, in tuberculosis, oncological, or rheumatological diseases), measuring liver stiffness in kilopascals (kPa) allows for the early detection of fibrosis formation.

Multiparametric ultrasound (mpUS), which emerged as a result of the evolution of ultrasound technologies, enables the quantitative assessment of not only fibrosis but also steatosis (CAP parameter) and inflammatory activity simultaneously. This is of unparalleled importance in monitoring mixed forms of DILI.

In the internal medicine clinic, non-invasive diagnostic methods are a safe, rapid, and highly informative tool for monitoring the dynamics of drug-induced liver injury (DILI). The integration of humoral biomarker analysis and elastography plays a crucial role in the early detection of hepatotoxic effects, in making clinical decisions regarding the discontinuation or dose adjustment of the medication, and in protecting patients from unnecessary invasive procedures.

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