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Clinical and Morphological Characteristics of Hepatobiliary System Lesions in Newborns with Sepsis

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ABSTRACT

Lesions of the hepatobiliary system (HBS) in neonatal sepsis represent one of the key morphological markers of the systemic inflammatory response and multiple organ failure; however, their clinical and morphological features remain insufficiently systematized. Neonatal sepsis remains one of the leading causes of mortality in the neonatal period and is frequently complicated by multiple organ failure. The hepatobiliary system plays a central role in metabolic, immunological, and detoxification processes; therefore, its involvement in sepsis reflects the severity of the systemic inflammatory response. However, clinical and morphological patterns of hepatobiliary system damage in neonatal sepsis have not been sufficiently systematized.

KEYWORDS: newborns, sepsis, liver, cholestasis, hepatobiliary system, pathomorphology.

STUDY OBJECTIVE. To assess the clinical and morphological characteristics of hepatobiliary system lesions in newborns who died from sepsis based on autopsy findings.

MATERIALS AND METHODS. A retrospective clinical and morphological study was conducted on 46 autopsy cases of newborns who died from sepsis. Clinical and anamnestic data, laboratory findings, and intensive care parameters were analyzed. Macroscopic and histological examinations of the liver and biliary system were performed using standard histological techniques with hematoxylin and eosin staining. The frequency and distribution of morphological changes were evaluated and correlated with clinical indicators of disease severity.

STUDY RESULTS. The majority of cases were represented by preterm newborns, and early-onset neonatal sepsis predominated. Clinically, most patients developed severe respiratory failure requiring mechanical ventilation and showed signs of multiple organ failure. Morphological examination revealed hepatomegaly, flaccid liver consistency, and heterogeneous parenchymal appearance. Histologically, predominant findings included protein and fatty degeneration of hepatocytes, intrahepatic cholestasis, sinusoidal congestion, focal hepatocellular necrosis, and portal inflammatory infiltration. Microcirculatory disorders with stasis and microthrombosis were

frequently observed, indicating the development of disseminated intravascular coagulation. Lesions of the biliary system were characterized by dilatation and deformation of intrahepatic bile ducts, epithelial dystrophy, and periductal inflammatory changes. The severity of hepatobiliary damage correlated with gestational age, duration of septic process, and the degree of multiple organ failure.

CONCLUSIONS Hepatobiliary system involvement in neonatal sepsis is characterized by a complex of dystrophic, cholestatic, inflammatory, and necrotic changes associated with microcirculatory impairment. These morphological alterations reflect the systemic nature of septic injury and play a significant role in the tanatogenesis of neonatal sepsis. Comprehensive clinical and morphological assessment of hepatobiliary lesions may improve the diagnostic accuracy of autopsy findings and contribute to the development of prognostic criteria and preventive strategies in high-risk newborns.

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