



Interpretation of Histology in Neonatal Cholestasis

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DESCRIPTION

Long-lasting conjugated hyperbilirubinemia that develops during the newborn period is known as Neonatal Cholestasis (NC). 50–70% of all instances of NC are caused by Extra Hepatic Biliary Atresia (EHBA) and Idiopathic Newborn Hepatitis (INH). Early surgical intervention is used to treat the former, while non-surgical supportive care is needed to treat the latter. Neonatal hepatitis surgery that may have been avoided could be performed if the two illnesses were not differentiated.

The lack of distinguishing clinical characteristics, biochemical markers, and other focused investigations to differentiate the two illnesses remains a significant issue. The idea of liver biopsy, which has been long regarded as the gold standard of liver disease, has been challenged by the extraordinary advancements in imaging tools and molecular biological techniques during the past few decades. Despite this, liver biopsy remains one of the most crucial diagnostic techniques for assessing EHBA [1]. As the diagnosis of EHBA might be difficult and the histological characteristics can overlap with other newborn cholestasis liver diseases, we used an objective, seven-feature, 15-point histological scoring system to evaluate the liver histology and distinguish EHBA from other causes of NC. In the majority of instances of EHBA, the bile ducts and ductules are CD56 positive, and CD56 immunostaining can be an effective method for identifying EHBA in its early, ductular proliferative phase [2]. The distinction between intra- and extra hepatic causes of newborn cholestasis must be made based on the liver's histology. A pathologist who was not aware of the ultimate diagnosis in each case reviewed the sections. Scintigraphy of the bile ducts and operational cholangiography were used to define the bile tract permeability [3].

The hepatic histopathology factors were examined statistically using the F test and discriminant analysis. The age of the patients on the date of the histopathological study was related to the discriminating factors between intra- and extra hepatic cholestasis chosen by the discriminant function test using the chi-square method with Yates correction [4]. In decreasing order

of significance, the hepatic histopathological variables periportal ductal proliferation, portal ductal proliferation, portal expansion, cholestasis in neoductules, foci of myeloid metaplasia, and portal-portal bridges were the most useful for differentiating between intra- and extra hepatic cholestasis. Myeloid metaplasia was the lone factor that suggested the diagnosis of intrahepatic cholestasis. No variable distinguished between intra- and extra hepatic cholestasis before the age of 2 months, and all of them, with the exception of the portal expansion, were discriminatory after this age. This was due to the small number of patients who were younger than 60 days on the date of the histopathological study (N=6). When seen in the liver biopsy of babies with cholestasis, foci of myeloid metaplasia suggested intrahepatic cholestasis [5]. Extra hepatic obstructive cholestasis was suggested by extra portal ductal proliferation, portal ductal proliferation, and portal expansion, cholestasis in neoductules, portal cholestasis, and portal-portal bridges.

One child in every 2500 live births experiences NC lasting longer than two weeks. Of these, biliary atresia accounts for up to 50% of cases, idiopathic newborn hepatitis for another 20%, and 1-antitrypsin deficiency for 15%. Due to the hepatocytes' ineffective uptake of bile acids and other organic anions as well as the presence of immature hepatic pathways for bile acid conjugation and biliary secretion, babies experience some degree of physiologic cholestasis during the first 3-4 months of life. To distinguish pathologic cholestasis from the typically benign physiologic forms of this illness is the first priority in these circumstances.

A total or partial obstruction of the extra hepatic biliary tree's lumen within the first three months of birth is known as biliary atresia. It is characterized by extra hepatic or intrahepatic bile duct fibrosis and increasing inflammation. One of the most crucial diagnostic procedures in the analysis of EHBA is liver biopsy. The majority of babies with undetected cholestasis should undergo a liver biopsy, which should be read by a pathologist with experience in paediatric liver disease, according to the NASPGN's Cholestasis Guideline Committee.

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