

MRCP in the neonates

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In the evaluation of neonatal cholestasis, sonography is the first-line imaging tool which provides much information for the diagnosis and clinical decision. When sonographic findings are inconclusive or highly suspicious of biliary tract anomalies, MRCP can be considered for the next imaging study. MRCP has become increasingly important in the diagnosis of pancreaticobiliary diseases in children and adults. In the neonates, however, MRCP is used in specific clinical conditions. MRCP is generally used for the differentiation of biliary atresia from other causes of neonatal cholestasis and for determination of the type of choledochal cyst and the presence of anomalous pancreaticobiliary ductal union (APBDU). As in adults, MRCP can be obtained using 2D (heavily T2 weighted sequences with thin slice or thick slab) or 3D imaging technique (steady state free precession with respiratory triggering or navigation echoes).

When MRCP demonstrates extrahepatic bile duct in the neonates, we can exclude the possibility of biliary atresia. Non-visualization of the extrahepatic bile duct has been described in many papers as the MRCP diagnostic criteria of biliary atresia as well as atrophic GB and increased periportal high signal intensities. However, false positive diagnosis of biliary atresia can occur in cases of severe intrahepatic cholestasis, because the ability of MRCP to detect extrahepatic bile ducts depends on the bile flow. In practice, irregular or linear background signals around the extrahepatic bile duct may obscure the thin extrahepatic bile duct. Furthermore these signals could be interpreted as presence of extrahepatic bile duct even in neonates with biliary atresia.

With MRCP, there is no difficulty in determining the type of choledochal cyst. However, the detection of APBDU depends on the type of choledochal cyst and visualization of pancreatic duct and common channel. When the bile sludge or stones are impacted in the common channel, MRCP cannot demonstrate the common channel itself. In cases of huge choledochal cysts or type Ia choledochal cysts, thin sliced 2D images or source images of 3D MRCP may be helpful for the evaluation of APBDU.

In contrast to adult cases, there are few clinical applications of MR contrast agents with hepatobiliary excretion in children. When used in neonates with cholestasis, time of sedation and MRCP examination as well as cost will increase. Although there are some aforementioned limitations or technical problems, MRCP is a good, non-

invasive imaging technique for the evaluation of biliary tract in the neonates.