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Magnetic resonance cholangiopancreatography in diagnosis of biliary disorders in children — Sharing our experience

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Abstract
Objective: To evaluate the role of Magnetic Resonance Cholangio-pancreatography in the diagnosis of biliary disorders in children.

Methods: The retrospective study was conducted at Aga Khan University Hospital, Karachi, and comprised data related to the period between August 2005 and December 2013. All children from age of 1 day to 17 years who had undergone Magnetic Rasonance Cholangio-pancreatography examination for suspected pancreaticobiliary disorders were included. Clinical presentation, Magnetic Rasonance Cholangio-pancreatography findings, operative findings and histopathological results were recorded. Sensitivity and specificity of Magnetic Rasonance Cholangio-pancreatography for different diseases was worked out.

Results: Of the 50 patients in the study, 12(24%) showed findings of choledochal cyst. Of these patients, 11(91.6%) underwent surgery and operative findings were consistent with choledochal cyst. Only 1(8.3%) who was assessed as biliary atresia was found to have choledochal cyst on surgery Magnetic Rasonance Cholangio-pancreatography was found to be 91% sensitive and 100% specific for diagnosis of choledochal cyst with diagnostic accuracy of 98%.

Conclusion: Magnetic Resonance Cholangio-pancreatography is a very accurate non-invasive investigation for the diagnosis of biliary disorders.

Keywords: Magnetic Resonance Cholangio-pancreatography , Biliary disorders. (JPMA 66: 27; 2016)
had been diagnosed with choledochal cyst, which were disproportionate dilatation of biliary ducts excluding other causes of dilatation such as stones, strictures, tumors or inflammation. Of these 12 patients, 11 (91.6%) subsequently underwent surgery and the operative findings were consistent with choledochal cyst and were proven on histopathology also.

Only 1 (8.3%) patient was given the MRCP finding of biliary atresia which is non-visualization of intrahepatic or extrahepatic biliary channels with a small or atretic gall bladder. This patient was found to have choledochal cyst on surgery with biliary plugs, cholestasis and fibrosis on histopathology. Out of the 12 surgically and histopathologically proven cases of choledochal cyst, 8 (66.6%) were females and 4 (33.3%) were males; 6 (50%) presented with jaundice and the remaining 6 (50%) with abdominal pain.

Of the total, 1 (2%) patient in the study had abnormal signal area in right hepatic lobe with biliary dilatation on MRCP. This patient underwent ultrasound-guided biopsy and histopathology showed inflammatory myofibroblastic tumour.

Four (8%) patients were given cholelithiasis or pseudolithiasis gall bladder on MRCP which was also seen either on gall bladder ultrasound or peroperatively. One (2%) patient had findings of pancreatic duct stone with pancreatic pseudocyst which was confirmed in later ERCP examination.

Two (4%) patients had acute pancreatitis and six (12%) had pancreatic pseudocyst on MRCP. Two (4%) patients had irregular and beaded biliary channels and were suspected for Alagille syndrome. MRCP of three (6%) patients had finding of pancreatic divisum. In 13 (26%) patients, examination was almost normal.

The sensitivity of MRCP in the diagnosis of choledochal cyst was 91% and specificity was 100%. Positive predictive value (PPV) was 100% and Negative predictive value (NPV) was 97%. Diagnostic accuracy for choledochal cyst was calculated to be 98%. For cholelithiasis, the sensitivity and specificity of MRCP were 100%.

**Discussion**
Our study gives a brief overview of the use of MRCP in evaluation and diagnosis of hepatic and pancreaticobiliary disorders in children. We also observed the female predilection in cases of choledochal cyst as reported in previous studies.9 Our sensitivity and specificity of 91% and 100% for the diagnosis of choledochal cyst are comparable with an earlier study.10 However, we did not find a single true positive case of biliary atresia. Therefore, we were unable to calculate the diagnostic accuracy of MRCP for biliary atresia. In cases of cholelithiasis and pancreatic duct calculi, we found 100% sensitivity and specificity which is somewhat higher than previously done studies. The reason of such high values may be the small number of these cases in our study.

Being a retrospective effort, our study had inherent drawbacks. Also, the MRCP findings were only reported by a single radiologist without any consensus. Besides, although the number of MRCP cases were not too small, but the number of cases of each diagnostic entity was not sufficient. Many of the MRCP findings in some diseases were not even confirmed either by surgery or other diagnostic modalities. However, in some disease entities, such as choledochal cyst or biliary tract calculi, the findings of MRCP were almost correct and stood proven with surgery or ERCP.

**Conclusion**
MRCP is a reliable and safe technique for the evaluation of pancreaticobiliary diseases, especially in children. It has a
very high diagnostic accuracy for choledochal cyst and pancreaticobiliary stones and it can be used as an alternative modality for ERCP and in situations where ultrasound and CT scan are fail to provide diagnostic help.

**References**