A STUDY ON THE ROLE OF MAGNETIC RESONANCE CHOLANGIOPANCREATICOGRAPHY IN EVALUATING PANCREATICO-BILIARY DISEASES

INTRODUCTION

Biliary obstruction may be due to a variety of causes including choledocholithiasis, tumors, and trauma etc. Neoplasms of the bile and pancreatic ducts present major challenge both for diagnosis and treatment. Ultrasonography is the first-line imaging investigation in patients with jaundice or right upper-quadrant pain. Ultrasonography is very operator and patient dependent and has limitations especially in the evaluation of the distal CBD where bowel gas, debris, fluid in the duodenum and obesity can degrade the image quality. CT scan also has its share of limitations, especially in demonstrating important pathology, biliary stones.

Endoscopic retrograde cholangiopancreatography (ERCP) is currently the 'gold standard' for the diagnosis of biliary obstruction. ERCP is a very operator dependent and invasive procedure and it is associated with 1-7% related morbidity and 0.2%-1% mortality.

Magnetic resonance cholangiopancreatography (MRCP) is a noninvasive diagnostic technique that was developed for the visualization of the biliary and pancreatic ducts. MRCP has potentially two major advantages in neoplastic pancreatico-biliary obstruction. Firstly, MRCP can directly reveal extraductal tumor whereas ERCP depicts only the duct lumen. Second, MRCP lacks the major complication rate of approximately 3% associated with ERCP such as sepsis, bleeding, bile leak and death. MRCP with its inherent high contrast resolution, rapidity, multiplanar capability and virtually artifact free display of anatomy and pathology in this region is proving to be examination of choice in patients with pancreatico-biliary diseases.

AIMS AND OBJECTIVES

To describe the Magnetic Resonance Cholangio-Pancreatography (MRCP) appearance in pancreatico-biliary disease and to prove that Magnetic Resonance Cholangio-Pancreatography (MRCP) is one of the best imaging modality for evaluation of pancreatico-biliary disease and it can also be used as a screening modality for the same.

MATeRIALS AND METHODS

STUDY PLACE

The present study is conducted in Department of Radiology, Alluri Sitarama Raju Academy of Medical sciences, Eluru.

STUDY DURATION

The present study is conducted over a period of two years commencing from November 2015 to October 2017.

STUDY POPULATION

The study comprised a total of 30 patients referred to radiology department with suspected pancreatico-biliary disease who met the following inclusion criteria.

EQUIPMENT

The patients were scanned using 1.5 Tesla Siemens make MagnetomAvanto (superconducting Magnet) 16 channelled Tim Dot system MRI machine.

OBSERVATIONS & RESULTS

A total of Thirty patients who were clinically diagnosed as having pancreatico–biliary diseases were sent for MRCP and were included in the present study.

Fig: 1. PERIAMPULLARY CARCINOMA

MRCP image showing dilatation of CBD and PD with GB distention suggestive of mass lesion in pancreatic head

Fig: 2. CAROLI’S DISEASE

Multiple dilated intrahepatic bile radicles suggestive of Caroli’s disease

KEYWORDS: Magnetic resonance cholangiopancreatography, MRCP, pancreatico-biliary pathologies.
The present study revealed proximal CBD benign strictures are more common than distal CBD benign strictures.

**DISCUSSION**

Evaluation of suspected biliary obstruction has traditionally involved a variety of imaging modalities including ultrasonography (US), computed tomography (CT) and invasive cholangiography. These techniques have limitations because of poor visualization of intraductal stones on US and CT and the need for invasive procedures like ERCP and PTC. MRCP is a non-invasive imaging modality that provides good visualization of the hepatobiliary system.

6 Cases of cholangiocarcinoma were evaluated. In one case of cholangiocarcinoma diagnosed by MRI there was infiltration into the gallbladder and minimal local spread. Per operative findings were those of carcinoma of gallbladder. This is a known limiting factor on imaging when both, the gall bladder and bile duct are involved. MRI helped in defining the level, extent and staging of the disease in the pre-surgical evaluation. Guibaud et al, Barish MA and Soto and Amandeep Singh, Harkaran Singh Mann, Chuni Lal Thukral, and NectiRajan Singh who concluded their studies with sensitivities ranging from 80-86% and specificities of 96-100% and diagnostic accuracies of 91-100% for level of obstruction.

In 3 cases of periampullary carcinoma, MRI was able to delineate the extent, level and local infiltration and helped in staging of the lesion. The assessment of the periampullary lesions was difficult on ultrasound in obese patients and bowel gas shadows was also a limiting factor. Sugita et al in his study of 25 cases of periampullary tumors reported a sensitivity 88%, specificity 100 and diagnostic accuracy of 96%.

 Morphology of the gland can be seen but the caliber of main pancreatic duct was difficult to visualize.

In 4 cases of choledocholithiasis, MRCP clearly shows the IHBR dilatation, caliber of CBD and the site of the calculus, especially in the distal CBD which is difficult to visualize on ultrasound. Varghese et al who reported 91% sensitivity, specificity of 98% and diagnostic accuracy of 97% on MRCP. AnkurJoohan and Myung-Jun Kim in a study of 47 patients showed in his study of 20 patients concluded the same. In 2 cases of choledochal cysts, MRCP yielded diagnostic information by providing exact anatomic map in pre surgical evaluation. Kim et al in his study of 20 patients concluded the same.

In 1 case of biliary atresia, MRCP detected with an accuracy of 100%, SeokJoohan and Myung-Jun Kim in a study of 47 patients showed MRCP had a sensitivity 88%, specificity 100 and diagnostic accuracy of 95% with MRCP.

CONCLUSION

The introduction of MRCP now readily permits the study of anatomy and pathology of the biliary tree including pancreatic duct very easily.

Based on the results of our study the following conclusions can be made:

- MRI serves as an accurate and noninvasive, non-ionizing imaging method for evaluation of pancreatico-biliary anatomy and pathology.
- Ultrasound still remains the primary investigative modality of choice.
- Combination of MRI and MRCP allows safe surgical management decisions.
- Potentially useful in patients undergoing biliary enteric anastomosis for knowing the level and extent of strictures.
- Very useful tool in case of obese patients and children.
- Drawbacks
  - Claustrophobia
  - No therapeutic and interventional procedures can be carried out
  - Breath holding is not possible in elderly, children and debilitated patients
  - Time consuming.

There is now enough evidence to suggest that the efficacy of MRI and
MRCP is at par with that of ERCP and can be considered as the gold standard for evaluation of the pancreatic–biliary system.

REFERENCES


