Research Article

Diagnostic Accuracy of magnetic Resonance Cholangiopancreaticography in Cases of Obstructive Jaundice

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ABSTRACT

Objective: To determine the diagnostic accuracy of magnetic resonance cholangio pancreatogrphy (MRCP) in cases of obstructive jaundice taking ERCP as gold standard.

Material and methods: This cross sectional validation study was done during August 2017 to March 2018at Department of Radiology, Services Hospital, Lahore. In the present study 60 cases of both genders with age more than 20 years were included. The cases were selected that had obstructive jaundice, the diagnosis of whose was made by yellowish discoloration of the eyes for less than one month and conjugated bilirubin level more than 3mg/dl. Then these cases underwent MRCP by using 1.5 Tesla machine and obstruction was labelled as yes when there is obstruction of at least more than 50% of the lumen. Then these cases underwent ERCP and obstruction was labelled as yes when similar percentage was seen as was in MRCP.

Results; In this study there were total 60 cases out of which 32 (53.33%) were females and 28 (46.67%) were males with mean age of 46.68±5.31 years. The mean BMI was 29.89±4.23 as shown in table 01. Obstructive jaundice was seen in 57 (95%) cases on MRCP and 59 (98.33%) on ERCP. The sensitivity of MRCP for obstructive jaundice was 98.25%, PPV was 98.25% and diagnostic accuracy was 96.67% with p= 0.01.

Conclusion; MRCP has shown significantly better results in diagnostic accuracy of obstructive jaundice taking ERCP as gold standard.

Keywords; Obstructive jaundice, MRCP, ERCP.

INTRODUCTION:

Obstructive jaundice is one of the most frequent and grave form of hepatobiliary disease. It is a mechanical blockage in the duct system which can be intra or extra ductal. Neoplasm, choledocholithiasis, biliarystricture, and primary sclerosing cholangitis lead tointra-ductal obstruction. External compression of biliary channels by neoplasm, pancreatic or cystic duct stones with subsequent gallbladder distention lead to extra-ductal obstruction.[1]

Obstructive jaundice is associated with significant morbidity and mortality. Patients can present with the symptoms of yellow discoloration of eyes (jaundice), vomiting, pruritus and weight loss in cases of malignancies. So, an early and accurate diagnosis is very important in obstructive jaundice so that its outcomes should be controlled as early as possible.

Ultrasonography[2] and CT scan[3] have been used in the past for the diagnosis of obstructive jaundice with different degree of success. But they have their own limitation as USG is greatly operator dependent and on the other hand CT

scan needs an IV contrast and also lead to radiation exposure. ERCP is considered as a gold standard for the diagnosis of obstructive jaundice and it has also the advantage of manipulation by which the obstruction is not only diagnosed, but also can be relieved.[4] But an unwanted and well documented complication in the form of pancreatitis due to slipped gall stone is also a great concern and it is also not available at every centre.The data regarding the role MRCP is lacking[5] and it accuracy in obstructive jaundice is very variable ranging from 80% to 100%.[6-8]

Objective:

To determine the diagnostic accuracy of magnetic resonance cholangiopancreatogrphy in cases of obstructive jaundice taking ERCP as gold standard.

METHODOLOGY;

Study design: Cross sectional validation study.

Study Setting: Department of Radiology, Services Hospital, Lahore

Duration of Study: August 2017 to March 2018

MATERIAL AND METHODS: In the present study 60 cases of both genders with age more than 20 years were included. The cases were selected that had obstructive jaundice, the diagnosis of whose was made by yellowish discoloration of the eyes for less than one monthhand conjugated bilirubin level more than 3mg/dl. Then these cases underwent MRCP by using 1.5 Tesla machine and obstruction was labelled as yes when there is obstruction of at least more than 50% of the lumen. Then these cases underwent ERCP and obstruction was labelled as yes when similar percentage was seen as was in MRCP

Statistical analysis;

The data was entered and analysed by using SPSS-23. Post stratification chi-square test was applied and $p \leq 0.05$ was taken as significant.

Results;

In this study there were total 60 cases out of which 32 (53.33%) were females and 28 (46.67%) were males with mean age of 46.68±5.31 years. The mean BMI was29.89±4.23 as shown in table 01. Obstructive jaundice was seen in 57 (95%) cases on MRCP and 59 (98.33%) on ERCP. The sensitivity of MRCP for obstructive jaundice was 98.25%, PPV was98.25% and diagnostic accuracy was 96.67% with p= 0.01 as shown in table 02.

Table No 01. Demographics of study subjects

	Mean	Range
Age (years)	46.68±5.31	20-67
BMI	29.89±4.23	26-38
Duration of illness (months)	3.56±0.56	1-6

Table No 02. Diagnostic accuracy of MRCP in obstructive jaundice (n= 60)

Obstruction on MRCP	Obstruction on ERCP		p value
	Yes	**No**	
Yes	TP 56	FP 01	p= 0.01
No	FN 01	TN 02	

TP= True positive TN= True negative FN= False negative   FP= False positive
Sensitivity= 98.25%
Specificity= 66.67%
PPV= 98.25%
NPV= 66.67%
Accuracy= 96.67%

DISCUSSION;

Gall stones are the most common causes of the obstruction to the biliary tract and lead to backward pressure and inability of its secretions including bilirubin to be drained out. They can be asymptomatic at smaller size and partial obstruction on one end and on the other they can be fata. Theincidene of its varies between 7% and 20%, of which 5% are asymptomatic[1,2]. Although common bile duct (CBD) stones may be silent, the development of complications such as cholangitis and acute pancreatitis is

associated with major morbidity and mortality. Therefore, the detection and treatment of CBD stones is mandatory. ERCP is a very good diagnostic test byt due to risk of pancreatitis there is always a need for a non invasive test with great degree of diagnostic accuracy.

In the present study obstructive jaundice was seen in 57 (95%) cases on MRCP and 59 (98.33%) on ERCP. The sensitivity of MRCP for obstructive jaundice was 98.25%, PPV was 98.25% and diagnostic accuracy was 96.67% with p= 0.01. These findings were close the results of the previous studies.According to a study carried out by Mubarak et al the sensitivity of magnetic resonance cholangiopancreatography for obstructive jaundice was 97%; specificity was 75% and accuracy was 80%, while positive predictive value (PPV) and negative predictive value (NPV) were 99% and 60% respectively.[6] Similar results were seen by study done by Mumtaz N et al where the diagnostic accuracy was approaching to 100% of cases.[9]

Another study conducted by Singh et al found diagnostic accuracy of 100% in their study to diagnose the cases of obstructive jaundice.[8]According ot a study done by El-Sayed EY et al carried in Egypt with similar protocols and found the diagnostic accuracy of MRCP about 86% only.[10]

CONCLUSION;
MRCP has shown significantly better results in diagnostic accuracy of obstructive jaundice taking ERCP as gold standard.

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