



“ASSOCIATION OF USG AND MRCP FINDINGS IN BILIARY AND PANCREATIC PATHOLOGIES IN A TERTIARY CARE HOSPITAL: A COMPARATIVE STUDY”

Radiology

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ABSTRACT

Background: Obstructive jaundice is quite possibly the most incessant and grave type of hepatobiliary disease. **Subjects and Methods:** Total of 35 consecutive patients out of which 18 male and 17 females, age range from 1-72 years, who presented with epigastric pain, decreased appetite, nausea, vomiting, fever with chills, yellow discoloration of skin and sclera. Patients underwent ultrasound followed by MRCP. **Results:** Accuracy of Diagnosis of USG versus MRCP findings in biliary and pancreatic pathologies in the study population. The cause of biliary obstruction was benign in 24 (68.6%) and malignant in 11 (31.4%). **Conclusion:** MRCP had highest accuracy of 91.4% whereas USG had 54.3 % accuracy in diagnosis of hepatobiliary and pancreatic pathologies

KEYWORDS

Malignant, Benign, USG & MRCP.

INTRODUCTION:

Obstructive jaundice is quite possibly the most incessant and grave type of hepatobiliary disease. It can present issues in analysis furthermore, the board, especially intrahepatic cholestasis. Thus, it is compulsory to decide pre-operatively the presence, the nature and site of block on the grounds that a badly picked helpful approach can be risky. Ultrasound is utilized as an underlying methodology to affirm or prohibit channel block, which it does with at any rate 90% accuracy.[1] Be that as it may, USG is administrator subordinate and has a constraint in patients with corpulence and those with huge measure of inside gas. Registered tomography (CT) is a solid methodology and gives great meaning of injuries and encourages perception of the whole degree of pancreatic pathology.[2] The scope of utilization of CT has been halfway limited by MRCP.[3] MRCP methods have extraordinarily advanced, giving high goal pictures of the biliary tree with short test term, while staying non-invasive without contrast medium injection. The outcomes were contrasted and other imaging modalities (US, CT examine and regular radiographs gotten during PTC or ERCP) and inferred that MR cholangiopancreatography has the ability for noninvasive imaging of the biliary tree in patients with obstructive jaundice however, improvement in method is expected to beat restricted spatial goal and low sign to commotion ratio.[4] Aim of this present study was to compare the diagnostic accuracy of two non-invasive modalities ultrasonography (USG) and magnetic resonance cholangiopancreatography (MRCP). Cases were followed up. The diagnosis was associated with ERCP, surgical findings and histopathology correlation.

Subjects and Methods:

This present study was conducted in the Department of Radiology, Gouri Devi Institute of Medical Sciences and Hospital, Durgapur during the period from July, 2017 to September, 2018. Total of 35 consecutive patients out of which 18 male and 17 females, age range from 1-72 years, who presented with epigastric pain, decreased appetite, nausea, vomiting, fever with chills, yellow discoloration of skin and sclera. Patients underwent ultrasound followed by MRCP. Patients of all age groups, sex, and profession who undergo USG and MRCP with strong clinical and lab evidence of biliary obstruction were included in this study. A written informed consent was taken from the patient. The study was approved by the institutional ethical committee. An Philips Affiniti 70 ultrasound machine with a curvilinear probe 3.5-5 MHz was used. Ultrasound has always been considered the technique of first choice in the study of biliary obstructive disease. Ultrasound is non-invasive, easy accessible, fast, easy to perform and less expensive. It has high sensitivity, specificity and reproducibility. However, USG is operator dependent and has a limitation in patients with obesity and gaseous distension. MRCP examinations were performed based on a standardized protocol. Magnetic resonance cholangiopancreatography (MRCP) is a non-invasive cross-sectional MRI imaging technique for biliary system. MRCP provides high quality biliary tract images. The basic principle of MRCP is that body fluids have high signal intensity on heavily T2-weighted magnetic resonance sequences (i.e., they appear bright), whereas background tissues have low signal (i.e., they appear dark). This technique is an accurate, safe, less operator dependent, non-

invasive imaging technique, which, in conjunction with MR images of abdomen, is highly sensitive and specific for the detection of biliary pathologies. It produces both high-quality, cross-sectional images of biliary system and projection images of biliary tree that are similar in appearance to those obtained by invasive radiographic methods, such as endoscopic retrograde cholangiopancreatography (ERCP), percutaneous trans-hepatic cholangiography (PTC). The collected data was coded and entered in the Microsoft office 2007 excel sheet. The diagnostic accuracy was determined using the statistic formulae.

RESULTS:

Total of 35 patients, out of which 18 (51.4%) were males and 17 (48.6%) female. Approximate half of all patients were between 54-72 yrs of age. Table 1 shows Accuracy of Diagnosis of USG versus MRCP findings in biliary and pancreatic pathologies in the study population. The cause of biliary obstruction was benign in 24 (68.6%) and malignant in 11 (31.4%). The most common cause of benign obstruction was choledocholithiasis (25%) and malignant obstruction was periampullary carcinoma (45.4%). The least common causes were pancreatic pseudocyst, a benign mass and Klatskin tumour. sixteen cases were inconclusive on ultrasound, whereas three cases were false positive for malignancy on MRCP. MRCP was 91.4% accurate in diagnosing the etiology. USG had an accuracy of 54.3%. The overall sensitivity and specificity were 84.2% and 62.7% with a positive predictive value of 91.4% and a negative predictive value of 45.7%.

Table 1: Distribution Cases as per USG and MRCP diagnosis:

Causes	USG N=35(%)	MRCP N=35(%)
Malignant		
Periampullary Ca	3(60)	5(45.4)
Pancreatic Ca	2(40)	3(27.3)
Klatskin tumor	0(0.0)	3(27.3)
Benign		
Benign stricture	0(0.0)	5(23.8)
Choledocholithiasis	4(28.6)	6(28.6)
Choledochal cyst	3 (21.4)	4(19.0)
Pancreatic pseudocyst	1(7.1)	1(4.8)
Benign mass	1(7.1)	
Physiological dilatation of the CBD	4(28.6)	4(19.0)
Others	1(7.1)	1(4.8)
Inconclusive	16(45.7)	3(8.6)
Total	35(100)	35(100)

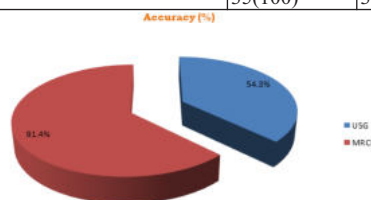


Fig.1 : Shows the Sensitivity of ultrasound and MRCP as compared to final diagnosis.

DISCUSSION:

Diagnosing patients with suspected biliary or pancreatic pathologies in their beginning phase is of most extreme significance in patient consideration and the executives. Information on the preferences and drawbacks of every strategy is expected to decide the suitable work up of patients with these pathologies. An intensive information on biliary life structures and pathology is basic to assess an instance of obstructive jaundice. Our investigation comprised of 35 patients. USG and MRCP were done in all the patients. The commonest indications patients gave biliary pathologies were correct upper quadrant and epigastric agony, tingling, yellowish staining of skin and sclera, queasiness, regurgitating, torment in midsection (restricted or diffuse) and fever with chills. The most youthful patient in our examination was 2 years of age and the most seasoned was 72 years of age. Maximum number of patients was adults in the age group of 54-72 yrs and minimum number of patients was in the age group of less than 10 yrs. Our study is in concordance with that of Singh APK et al in 2015, in whose study, majority of the cases were found to be in the age group 51-60 years.[4] In our study male preponderance was seen. Our study is in concordance with that of Sutar et al 2015 who concluded that biliary obstructive diseases were found to be more common in men than in women.[5] The most common cause for obstructive jaundice in our study was benign in 68.6 % of cases. Among the benign causes choledocholithiasis is the commonest (31.4 %). Least common causes were pancreatic pseudocyst, benign mass. Common malignant cause was periampullary carcinoma and the least common was Klatskin tumour. There were four cases showing physiological dilatation of the CBD of which two were post cholecystectomy cases and one showed physiological dilatation of CBD on USG and MRCP. On MRCP, the most common malignant cause for obstructive jaundice was periampullary Ca and least common cause was cholangiocarcinoma. On USG, it was observed that the most common malignant cause for obstructive jaundice was periampullary Ca and benign cause was choledocholithiasis. Ultrasound was inconclusive in 31.4%. In imaging of benign lesions MRCP diagnosed CBD calculi in 4 patients and USG showed the same in 4 patients. MRCP showed 100% accuracy in detecting CBD calculi. MRCP showed calculus in CBD as an area of signal void. My study is in concordance with Munir et al in 2004 and Bhatt C et al in 2005 in their study they found that MRCP was 100 % accurate in diagnosing CBD calculus.[6] MRCP clearly showed benign nature of stricture in all 5 cases approaching 100% accuracy. USG was not able to diagnose any of the strictures. Our study is in concordance with Bhatt et al and Safa Al-Obaidi et al in 2007 in whose studies they found 100% accuracy of MRCP in diagnosing benign CBD strictures.[7,8] Among the four cases of the choledochal cysts, MRCP was 100 % accurate in diagnosing all the 4 cases where as USG was accurate in 3 cases. Our study is in concordance with Bhatt et al and Singh et al in 2015 who found 100% accuracy of MRCP in diagnosis of choledochal cysts. MRCP and they turned out to be benign. In 5 cases out of 11, periampullary growth was diagnosed. Amongst these 5, MRCP detected periampullary growth in 4 which were proved on subsequent histopathology. One patient was diagnosed to have periampullary growth on MRCP but on histopath, it turned out to be benign. One case which was diagnosed as retroperitoneal mass. Nodal mass compressing the CBD turned out to be periampullary carcinoma. On USG only 3 out of 5 cases were diagnosed as periampullary carcinoma. Our study is in concordance with Kushwah et al. In their study they found 98 % accuracy of MRCP and USG in diagnosing periampullary growth. In 3 cases of pancreatic carcinoma, MRCP diagnosed 3 cases (100%) accurately. In one MRCP showed a distal CBD stricture which turned out to be pancreatic carcinoma on histopathology. Only one of the 3 cases was diagnosed by USG. On MRCP one of the case was falsely diagnosed as pancreatic carcinoma which turned out negative for malignancy on histopathology correlation. Diwanji et al in 2016 correctly diagnosed pancreatic carcinoma by MRCP (100%).[9] In a control study in 2003 done by Zhong et al, they found that USG and MRCP was 63% and 90% accurate in diagnosing of pancreatic head carcinoma.[10] USG is the modality of initial evaluation in biliary obstruction, whereas MRCP gives a better diagnosis with less false positive. USG has inherent drawbacks and limitations which compromise diagnostic accuracy in lower CBD obstructions. MRCP is much more accurate in diagnosing CBD and pancreatic duct pathologies and it helps in deciding further management. It guides the surgeon doing ERCP and thus cuts down the rate of „negative□ ERCP.[11] MRCP has shown similar findings to that of ERCP in patients with suspected biliary obstruction. In patients in whom an endoscopic procedure is not possible (previous biliary enteric anastomosis, previous partial gastrectomy etc.), MRCP is the best diagnostic tool.[12] similar to that mentioned in the study

conducted by Bhatt C et al.[13] Upadhyaya V et al[14] conducted another study on MR cholangiopancreatography and revealed better results in detecting the cause of obstruction and was second only to ERCP in detecting the level of biliary obstruction on 100 patients. This present study, MRCP had highest accuracy of 91.4% whereas USG had 54.3 % accuracy in diagnosis of hepatobiliary and pancreatic pathologies. The overall sensitivity and specificity were 84.2% and 62.7% with a positive predictive value of 91.4% and a negative predictive value of 45.7%.

CONCLUSION:

These finding suggest that, the MRCP was the better noninvasive methodology in pancreato-biliary pathologies than ultrasound. MRCP is non-obtrusive, radiation free strategy for exact appraisal of the pancreato-biliary tree. MRCP is fit for multiplanar imaging and 3D recreation. Ultrasound is a non-intrusive, radiation free methodology. It is more affordable, effectively accessible, requires less time. MRCP, because of its symptomatic precision, can possibly supplant or restrict the utilization of obtrusive methodology like analytic ERCP. Endoscopic retrograde cholangiopancreatography (ERCP) assists with portraying the injury by giving tissue samples.

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