

Endoscopic Retrograde Cholangiopancreatography (ERCP)-as a Diagnostic Technique in Pancreatobiliary System and its Comparison with Abdominal Ultrasound. (An experience with 50 patients)

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Obstructive jaundice is a fairly common ailment. For the proper management of obstructive jaundice it is essential that one should know the cause of obstruction. Abdominal ultrasonography and ERCP are the most commonly employed modalities of diagnosis in such cases. This study was carried out to evaluate and compare the diagnostic yield of these two tests in patients suspected to have obstructive jaundice. A total number of 50 patients including 29 females and 21 males were enrolled for study. All patients were subjected to abdominal ultrasonography and ERCP. Abdominal ultrasound was able to determine the cause of obstruction in 17(34%) patients. Biliary calculi were the commonest cause of obstruction, present in 12(24%) patients, followed by carcinoma of the gall bladder and common bile duct (CBD) malignancy, found in 3(6%) and 2(4%) patients respectively. In 33(66%) patients ultrasound only showed dilatation of the hepatobiliary passages without any definite cause of obstruction. On the contrary, ERCP was able to find the cause of obstruction in 47 (94%) patients. The commonest cause of obstruction again was the biliary calculi, found in 21 (42%) patients, followed by malignancy in 19(38%) patients, comprising of 10(20%) cases of ampullary carcinoma, 6(12%) cases of cholangiocarcinoma and 3(6%) cases of gall bladder carcinoma. Three (6%) patients were found to have benign strictures of CBD. One (2%) patient was found to have post-surgical metal clip and another one (2%) was found to have Caroli's disease. In 1(2%) patient no cause of obstruction was found even on ERCP and 2(4%) patients could not be cannulated. Therefore, it is obvious that although a difficult procedure, ERCP is diagnostic in more number of cases of obstructive jaundice as compared to abdominal ultrasound. Hence, it is recommended that ERCP should be performed in patients where ultrasound is non-diagnostic and in patients where exact details regarding obstruction are required. Moreover, ERCP should be performed where ever some therapeutic endoscopic procedure is contemplated.

Key words: Obstructive jaundice, ERCP, Abdominal ultrasound.

ERCP has diagnostic and therapeutic applications in patients having pancreatobiliary problems. ERCP is a complex procedure involving the co-operation between a skilful endoscopist, trained nurse, enthusiastic assistant and a competent radiologist. The therapeutic implications of ERCP are as important as diagnostic uses¹.

ERCP is performed on an X-Ray table under fluoroscopic control by introducing a side-viewing scope into the descending duodenum. The papilla of Vater is cannulated, contrast medium is injected, and the pancreatic ducts and hepatobiliary ducts are visualised radiographically. Proper sedation and duodenal hypotonia with spasmolytics is required during the procedure. Skilled operators can visualise 90 to 95% of pancreatic ducts and 90% of biliary ducts².

The procedure is especially useful in patients with persistent jaundice, the cause of which can not be established by conventional diagnostic methods. The important differential diagnosis is between obstructive and non-obstructive jaundice. The safety of abdominal ultrasound in diagnosis of jaundice is well known, as the data like that of Lapis et al showed that ultrasonography is accurate in 94% of cases if serum bilirubin is more than 10 mg %³. But it is also well known that such higher degree of accuracy requires significant degree of experience on

part of ultrasonographer. Moreover, a significant number of cases (about 15%) shown to be having obstructive or non-obstructive jaundice on ultrasound have proven to be otherwise on ERCP².

The therapeutic procedures involving ERCP include, biliary and pancreatic draining by papillotomy, stone extraction, relief of sphincter of Oddi dysfunction and insertion of stents in benign and malignant strictures².

ERCP is a safe procedure when performed by an experienced operator. Pancreatic and biliary infection are the possible complications of ERCP. In this study we have compared the results of ERCP and abdominal ultrasound so far as diagnosis of jaundice is concerned.

Materials and Methods

This study was carried out in the department of medicine and gastroenterology, Services Hospital, Lahore.

The following patients of any age or sex were included in the study.

1. Patients having jaundice on clinical examination and laboratory investigation
2. Patients having dilatation of intra or extra hepatic duct system on abdominal ultrasonography.
3. Patients having elevated alkaline phosphatase.

The following patients were excluded from the study

1. The patients having prothrombin time prolongation >4 seconds unless corrected by vitamin K injection
2. The patients having platelets count less than 80,000/mm³.
3. The patients having bad cardiovascular or respiratory disease.

The patients fulfilling the inclusion criteria were subjected to ERCP with sedation and i/v spasmolytics and prior local lignocaine gargles. The patients were also given i/v cefuroxime before the start of procedure. The procedure was carried out in the radiology department of Services Hospital, Lahore under fluoroscopic control.

Fifty patients were subjected to ERCP that included the patients coming directly to our unit and patients referred from other medical or surgical consultants of various hospitals

Results

Fifty patients including 21 males and 29 females were included in the study (Table 1). Their ages ranged from 11-90 years with a mean age of 52.5 years±16.03 SD. Abdominal ultrasound was able to find out the cause of obstruction in 17(34%) patients. In rest of the 33(66%) patients, abdominal ultrasound only revealed common bile duct (CBD) dilatation without any definite cause of obstruction. Out of the 17 patients, 12(24%) had stone in the CBD, 3(6%) had carcinoma of the gall bladder and 2 (4%) had CBD malignancy (Table 2).

Table 1. Sex distribution of patients. (n=50)

Sex	No	%age
Male	21	42
Female	29	58

Table 2. Findings on abdominal ultrasound. (n=50)

Pathology detected	No. of Pts.	%age
Stone in the common bile duct (CBD)	12	24
Carcinoma of gallbladder	03	06
CBD malignancy	02	04
CBD dilated with no obvious cause	33	66

ERCP results are shown in Table 3.

Table 3. Findings on ERCP. (n=50)

Pathology detected	No. of Pts.	%age
Stone in the common bile duct (CBD)	21	42
Ampullary carcinoma	10	20
Cholangiocarcinoma	06	12
Benign strictures	03	06
Carcinoma of gallbladder	03	06
Miscellaneous*	02	04
Normal	02	04
Ampulla could not be cannulated	02	04
Non-diagnostic	01	02

*Miscellaneous causes included metal clip left after surgery (n=1), Caroli's disease (n=1).

CBD could not be cannulated in 2(4%) patients. One (2%) patient was found to have normal biliary passages. Twenty one (42%) patients had CBD stones, 6(12%) had

cholangiocarcinoma, 3(6%) had benign strictures of CBD and 3(6%) had carcinoma of the gall bladder. Out of the remaining 3 patients, one had Caroli's disease, one had post surgical metal clip and one patient did not have any definite cause of obstruction. It is evident from the results of the study that ERCP was diagnostic in 47(94%) patients as compared to only 17(34%) patients with abdominal ultrasound (Table 4). This is of high statistical significance as the "p" value by chi square test is < 0.005.

Table 4. Comparison of results of abdominal ultrasound and ERCP. (n=50)

Results of the procedure	Abdominal ultrasound		ERCP	
	No.	%age	No	%age
Diagnostic	17	34	47	94
Non-diagnostic	33	66	03*	06

*Non-diagnostic patients, 2 out of 3 patients are those who could not be cannulated during ERCP.

Discussion

Although abdominal ultrasonography is a non-invasive method of first choice in patients having jaundice, especially of obstructive variety; it may not be able to find the cause of obstruction in quite a number of cases. Moreover, exact site of obstruction and exact site and position of cancers, cysts or localised inflammation in pancreas may not be discernible on ultrasonography⁴. ERCP is especially useful in patients with persistent jaundice, the cause of which cannot be established by conventional diagnostic methods. The important differential diagnosis is between obstructive and non-obstructive jaundice when the cause of jaundice is unclear. Approximately 15% of the patients thought to have non-obstructive jaundice prove to have extrahepatic biliary obstruction requiring surgery on ERCP and conversely the same percentage of patients thought to have obstructive jaundice prove to have an open ductal system by ERCP and can be spared unnecessary intervention². ERCP can assure that no operable cause of obstruction is being missed.

In the present study, it was found that abdominal ultrasound was diagnostic in 34% of the patients whereas ERCP was diagnostic in 94% of the cases. This 94% success rate is comparable to the international data mentioned in literature^{2,4}.

Advantages of endoscopic approach are that in addition to the biliary passages, the papilla and the pancreatic ducts are also seen and that therapeutic manoeuvres like endoscopic sphincterotomy or drainage can be performed where appropriate. In our study, such procedures were performed in quite a number of patients.

Conclusion

Abdominal ultrasonography is the investigation of choice in patients having cholestatic jaundice but in problematic cases ERCP is a superior method for diagnosis. Therefore, it is recommended that those patients should undergo

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ERCP where the cause of jaundice is not established on abdominal ultrasound or the patient needs endoscopic therapeutic intervention. ERCP will not only establish the cause and site of obstruction but also the obstruction may be relieved where ever possible.

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