

Etiology and Diagnosis of Obstructive Jaundice, Our Experience

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ABSTRACT

Introduction: Obstructive jaundice is a common problem faced by surgeons.

Objectives: To ascertain various etiologies of obstructive jaundice in our set up and to evaluate the usefulness of available diagnostic modalities.

Study Design: Descriptive Study.

Place and Duration of study: This study was conducted at Allied and District Head Quarter Hospital, Faisalabad from April 2010 to Sep. 2010.

Materials and Methods: Eighty-five patients with obstructive jaundice were included in the study. They were evaluated on the basis of history, clinical examination, biochemical tests and ultrasonography. CT scan abdomen was done in suspected malignant cases only. Operative findings were compared with preoperative ultrasound and CT scan findings. The results were then prepared and analyzed.

Results: In our study, 56.5% patients were of benign etiology and 34.5% were of malignant etiology. Female to male ratio was 2:1. Serum bilirubin was raised more in malignant diseases than in benign diseases. An accuracy of 80% of ultrasound and 86% of CT scan abdomen was found out after performing different surgical procedures in our patients. In benign group of patients the most common cause was choledocholithiasis, 47.1% while in malignant group the most common cause was carcinoma of head of pancreas, 34.1%.

Conclusion: Common causes of obstructive jaundice in our study were choledocholithiasis and carcinoma head of pancreas. Ultrasound is a reliable tool for diagnosis of obstructive jaundice, and CT scan is helpful in evaluation of malignancy.

Key words: Obstructive jaundice, Choledocholithiasis, choledochoduodenostomy, Hepaticojejunostomy.

INTRODUCTION

Jaundice is the greenish- yellow discoloration of the skin and sclera and when it is associated with history of itching, clay colored stools and dark colored urine the diagnosis of obstructive jaundice is almost certain. Hyperbilirubinaemia becomes clinically evident when bilirubin level exceeds 3 mg/dl.¹ ²Both benign and malignant conditions can lead to obstructive jaundice. Malignant causes account for more than half of the causes.³ Malignancy is the commonest cause of obstructive jaundice in Pakistan as well as in the subcontinent.⁴

Determining the exact cause of obstructive jaundice is often a complex and challenging affair. An early and accurate diagnosis and treatment affect the outcome of the patients' condition profoundly.⁵ ⁶ Initial assessments to ascertain the etiology of obstructive jaundice requires detailed history and good clinical examination followed by certain biochemical tests and various imaging techniques.⁷ Management of obstructive jaundice depends upon type of etiology, fitness of the patient and therapeutic facilities that are available. Obstructive jaundiced patients should be managed expeditiously to avoid the dreadful complications like cholangitis.⁸ Different surgical

options are available for the treatment of different causes of obstructive jaundice.⁹

MATERIAL AND METHODS

Inclusion Criteria: All patients with obstructive jaundice presenting to Allied and DHQ Hospitals above 12 years of age were included in our study.

Exclusion Criteria: Patients with medical jaundice, advanced malignancy with distant metastasis, patients unfit for surgery due to medical problems and patients unwilling for surgery, were all either excluded or dropped from our study.

Patients of obstructive jaundice were admitted in surgical units of Allied and DHQ Hospitals through OPD. They were evaluated on the basis of history, clinical examination, biochemical tests and ultrasonography. The patients with suspicion of malignancy on ultrasound were further evaluated with the help of CT scan abdomen. All the patients were subsequently operated and pre-operative findings of imaging modalities were compared to operative findings and accuracy rate of ultrasonography and CT scan was evaluated. The final diagnosis achieved either by histopathology or operative findings were recorded and the etiological incidence of various diseases was calculated. The chi-square test was applied for

qualitative data to compare differences of frequencies for significance, while the students T test was applied for quantitative data to compare differences of means for significance. P values of data <0.05 were considered significant. Data were analyzed using SPSS programme.

RESULTS

All 85 patients in our study underwent laparotomy either for confirmation of diagnosis or for definite surgical treatment. All the cases were diagnosed on the basis of histopathology or operative findings. Number of patients with benign and malignant etiologies of obstructive jaundice in our study has been shown in table I.

Table No.1: Patients with benign and malignant etiologies

Benign causes of obstructive jaundice	No. and percentage of Patients	Malignant causes of obstructive jaundice	No. and percentage of Patients
Choledocholithiasis	40(47.1%)	Carcinoma head of Pancreas	29 (34.1%)
Benign CBD Stricture	06(7.1%)	Carcinoma Gall Bladder	6 (7.1%)
Liver Abscess	01(1.2%)	Cholangio-carcinoma	2 (2.4%)
Choledochal-cyst	01(1.2%)		
Total	48(56.6%)		37 (34.5%)
Grand total of patients	85 (100%)		

The age range of patients in our study was from 12 to 85 years. Average age for different causes of obstructive jaundice was 43 years. The maximum incidence of benign disease was found in the age group of 21-30 years and for malignant disease it was 51-60 years. Mean age for malignant disease was 58 years with 12.5 as standard deviation, and mean age for benign diseases was 41 years with 17.6 as the standard deviation. P value for age, by applying Student's T Test, was 0.000 for etiology and was highly significant. Number of male and female patients with benign and malignant etiologies and their ratios has been shown in table 2.

Table No.2: Male to female ratio

No. of patients	Benign causes	Malignant causes	Total
No. of male patients	12(41.4%)	17(58.6%)	29 (34.1%)
No. of female patients	36(64.3%)	20(35.7%)	56 (65.9%)
M:F ratio	1:3	1:1.17	1:1.93

Liver function tests were performed in all 85 patients and were deranged. Serum bilirubin ranged from 3.5 mg/dl to 22.8 mg/dl. The mean level of serum bilirubin

was 10.56mg/dl with 5.17 as standard deviation. There was strong statistical association of serum bilirubin level with etiology (P value: 0.000). Serum alkaline phosphatase ranged from 395 U/L to 2300 U/L. Mean level of Serum alkaline phosphatase was 944.74 U/L with 470.6 as standard deviation. There was strong statistical association of serum alkaline phosphatase with etiology (P value 0.001). Serum bilirubin and serum alkaline phosphatase were raised more in malignant diseases than benign diseases.

Ultrasound abdomen was also used in all 85 patients to differentiate between medical and surgical jaundice. In 68 patients findings were compatible with operative findings, in 17 patients the findings were inaccurate, an accuracy of 80%. CT scan of abdomen was performed in malignant cases, 37 patients. Diagnosis was supported by operative findings in 32 cases and in 5 cases preoperative findings were not comparable, an accuracy of 86%. Different surgical procedures performed in different benign and malignant etiologies of obstructive jaundice in our study have been shown in table 3.

Table No.3: Procedures performed

Serial No.	Causes of obstructive jaundice	Procedures performed	No. of patients	%age
1	Carcinoma head of pancreas	Biopsy was taken in 17 cases followed by ERCP	17	20%
		Choledochoduodenostomy	2	2.4%
		Double Bypass gastrojejunostomy, cholecystojejunostomy	8	9.4%
		Whipple operation	2	2.4%
2	Carcinoma Gall Bladder	Biopsy was taken	6	7.1%
3	Cholangiocarcinoma	Biopsy was taken	2	2.4%
4	CBD stone	CBD exploration and T tube insertion	36	42.4%
		Choledochoduodenostomy	4	4.8%
5	Liver abscess	Open drainage	1	1.2%
6	Benign CBD stricture	Hepatico-jejunostomy	6	7.1%
7	Choledochal cyst	Hepatico-jejunostomy	1	1.2%
Total			85	100%

Different postoperative complications of above mentioned procedures have been shown in table 4. Statistically significant association of complications was found with etiology, benign/malignant (P value 0.0498).

Table No.4. Post operative complications

	Complications	No. and percent- age of patients
1	Biliary leakage	02 cases (2.4%)
2	Sub-hepatic collection	03 cases (3.5%)
3	Chest infection	08 cases (9.4%)
4	Wound infection	10 cases (11.8%)
5	Patients died during the hospital stay	03 cases (3.5%)

Total 6 patients in our study had their serum bilirubin level more than 20 mg/dl out of them 3 patients had good post-operative recovery and 3 had complications.

DISCUSSION

Our study of 85 patients revealed 48 cases (56.5%) of benign causes and 37 cases (43.5%) of malignant causes. This observation is in contrary to Jamil M et al 2000¹⁰ who showed malignant incidence of 75%. Aziz M et al made similar observation; they showed the malignancy incidence of obstructive jaundice to be 84%.¹¹ A study conducted by Saddique and Iqbal whose figures are 54.17% and 45.83% respectively for malignant and benign etiologies of obstructive jaundice which are comparable to our results.⁹ In other studies it has been documented that malignancy is more common cause of obstructive jaundice.^{3,11} These differences in results may be due to different geographies or due to the difference in study durations.

In malignant group of 37 patients in our study carcinoma head of pancreas was diagnosed in 29 patients (78.4%), carcinoma gall bladder in 6 patients (16%) and cholangiocarcinoma in 2 cases (5.4%). The malignancy incidence increased as age progressed. In contrast, Aziz M et al in their study have documented carcinoma gall bladder to be the main cause, present in 44 patients (52%), carcinoma pancreas was present in 26 patients (31%) followed by cholangiocarcinoma in 8 patients (10%) and hepatoma in 6 patients (7%).¹¹ This difference may be due to geographical variation or the duration of study. Our study was conducted over six months time while their study was conducted over a period of two years.

In benign group of 48 patients, CBD stone was the commonest cause occurring in 40 patients (83.3%) followed by benign CBD stricture in 6 patients (12.5%), choledochal cyst 1 patient (2.1%) and liver abscess in 1 patient (2.1%). Benign causes of obstructive jaundice were more common in younger age group, highest in 21-30 year range. Hotineanu V et al 2005 conducted a study on surgical strategy in the management of benign obstructive jaundice and made a similar observation

regarding the different benign causes. In their study CBD stones were diagnosed in 75% of patients.¹² Admassie D et al (2005) evaluated the validity of ultrasonography in 05 patients from Ethiopia and showed benign causes to be more common cause of obstructive jaundice a result similar to our observation.¹³

Admassie D et al (2005) evaluated the validity of ultrasonography in 05 patients from Ethiopia and showed benign causes to be more common cause of obstructive jaundice a result similar to our observation.¹³

In our study one patient of liver abscess presented with obstructive jaundice. Cushieri A et al (2002) have reported 7 % of patients with liver abscess can present with jaundice.¹

One patients of choledochal cyst presented with obstructive jaundice in our study. This is not, an unusual presentation as has also been reported by other studies.^{17, 18}

Cholangiocarcinoma was present in 02 patients as cause of obstructive jaundice in our study, which is relatively less as compared to other reported studies. Aziz M et al (2004) have reported 10% incidence of cholangiocarcinoma as compared to our 2.4%.¹¹

LFTs were done in all 85 patients and were found deranged. Serum bilirubin was raised more in malignant cases than in benign cases as reported by Hayat JO et al (2005) in their study.¹⁹ Same was the case with alkaline phosphatase. Alkaline phosphatase was raised more in malignant diseases than in benign cases an observation, which was also reported by Nychytailo MIU et al 2004.²⁰

It was found in our study that diagnostic accuracy of ultrasound was 80% which is comparable to Verma SR et al (2011) who showed 87.3% diagnostic accuracy of ultrasound in obstructive jaundice.⁷ CT scan abdomen was used in the evaluation of malignant cases in our study. CT abdomen showed accuracy of 86% in diagnosing malignant causes of obstructive jaundice. CT scan is traditionally used for evaluation and staging of malignant cases especially carcinoma gall bladder as observed by Rao ND et al 2005.²¹

Benign CBD strictures were managed by doing Roux-en-Y hepaticojejunostomy in six patients. Hepaticojejunostomy is recommended as the procedure of choice in the management of CBD injuries and strictures as it is very effective on long-term basis as compared to endoscopic approach as recommended by Kaman L et al 2004.¹⁶ Insertion of endoprosthesis or dilatation is successful in 60-90% of benign CBD strictures. Jacobs et al 2005 used this technique with good results. Hepaticojejunostomy was also done in one case of choledochal cyst.²² Incision drainage (open) was adopted for one case of liver abscess.

Seven cases of carcinoma of pancreas, 6 cases of carcinoma gall bladder and 2 cases of

cholangiocarcinoma were operated with palliative or therapeutic intent but only biopsy was done because of advanced disease. In such patients diagnostic laparoscopy may be used initially to avoid unnecessary surgery as recommended by Saeed M et al 2003.²³

In 18 patients of carcinoma head of pancreas palliation with triple bypass procedure and in two patients, choledochojejunostomy was done. In most of the patients endoprosthesis (endoscopic stenting) to relieve the jaundice is the preferred management as shown by Geraci G et al 2005 in their study regarding management of carcinoma pancreas.²⁴ This facility unfortunately is not available in our set-up.

Whipple's procedure was performed in 2 cases of carcinoma head of pancreas (6.9% of pancreatic tumours in our study) with good results. Surgical resection is only possible in about 10% of cases as many patients have locally advanced or metastatic disease at the time of presentation as Thomson BN et al 2006 documented in their series.²⁵

In our study, the most common post operative complication was wound infection occurring in 11.8% cases. Other complications like biliary leakage (2.4%), sub-hepatic collection (3.5%), and chest infection (9.4%) were also noted. Three patients (3.5%) died during hospital stay in our study. The complications rates are comparable to other studies. Hussain D et al (2004) reported wound infection in 9.9% cases, leakage in 6.67% cases and in-hospital mortality of 9.99%.²⁶

CONCLUSION

Common causes of obstructive jaundice in our study were choledocholithiasis and carcinoma head of pancreas. Ultrasound is a reliable diagnostic tool for obstructive jaundice, and CT scan is helpful in evaluation of malignancy.

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