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Original Research Article

Clinical study of surgical jaundice: an institutional experience

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ABSTRACT

Background: Patients with surgical jaundice need quick and precise diagnosis for the presence of an obstruction in the biliary tract, to establish the level and nature of the lesion. The importance of history and clinical examination in arriving at a correct pre-operative diagnosis needs to be emphasized. Present study attempts to determine the various causes, age and sex pattern in extra hepatic obstructive jaundice.
Methods: 100 patients with surgical jaundice were studied at IMS and SUM Hospital, Bhubaneswar, India during the period from September 2015 to September 2017 who were diagnosed by investigation like ultrasonography and liver function test.
Results: 76% of patients were between the age group of 50-80 years, there was a slight male predominance in 53.33%, malignant cause for surgical jaundice constituted in 66.67% with carcinoma head of pancreas the commonest cause in 33.33%, benign cause for surgical jaundice constituted in 33.33%, with choledocholithiasis the commonest cause in 23.33%.
Conclusions: Most common age group seen in surgical jaundice was between 50-80 years. The sex ratio is near equalizing. Most common cause of surgical jaundice was carcinoma head of pancreas and choledocholithiasis.

Keywords: Bilirubin, Choledocholithiasis, Cholestasis, Extrahepatic bile duct obstruction

INTRODUCTION

Surgical jaundice is defined as structural or mechanical obstruction whereby the outflow of bile has been obstructed anywhere from the liver to the duodenum. Jaundice is frequently encountered by the general surgeons. The common conditions that cause extra-hepatic
biliary obstruction and "surgical jaundice" include choledocholithiasis, benign biliary strictures, peri-ampullary cancer, cholangio-carcinoma and primary sclerosing cholangitis.[1] Other, less common causes of bile duct obstruction include choledochal cysts, indwelling biliary cathers, blood clots in the bile duct because of hemobilia, strictures that develop with Caroli's diseases and extrinsic compression of the bile duct.[2-4] In all cases of surgical jaundice, it is mandatory to determine pre-operatively the exact nature and the site of obstruction because an ill-chosen therapeutic approach can be dangerous.[5]

Patients with obstruction of the bile duct may develop nutritional deficits, impairment of cardiovascular and renal function, and have infectious complications that have an impact on their outcomes. An appreciation of the pathophysiology of obstruction of the extrahepatic bile duct and appropriate preparation of the patient before surgical interventions are essential if morbidity and mortality are to be minimized in patients with surgical jaundice. The present study will focus on various causes, age and sex pattern in extra hepatic obstructive jaundice and their subsequent management in patients with surgical jaundice.

METHODS

The materials for the clinical study were collected from the cases admitted to the Department of Surgery, IMS and SUM Hospital, Bhubaneswar, India during September 2015 to September 2017. Ethical clearance has been obtained from research and dissertation committee/ ethical committee of the institution for this study. This is a cross sectional observational study of patients admitted and positively diagnosed as extra hepatic obstructive jaundice. Inclusion criteria, patients admitted and positively diagnosed as extra hepatic obstructive jaundice by investigation like ultrasonography and liver function test were included in this study. Exclusion criteria, patients with jaundice other than extra hepatic obstructive pathology like hemolytic jaundice, hepatocellular jaundice and intra hepatic obstructive jaundice were excluded from the study. Clinical study of 100 cases of surgical jaundice of different aetiology were analysed. Following admission individual cases were examined systematically and clinical data were recorded according to the proforma. Investigation like urine bile salt, bile pigment, liver function test, ultrasonographic study of the abdomen were done in all the cases. The cases were followed up to discharge and then up to 6 months.

RESULTS

The results obtained in the present study were analysed as follows, 100 patients with surgical jaundice were studied. The age group varied from 3 years to 75 years, the average age was 55.5 years. There were 56 (56%) male and 44 (44%) female in present study with slight male predominance (Figure 1).

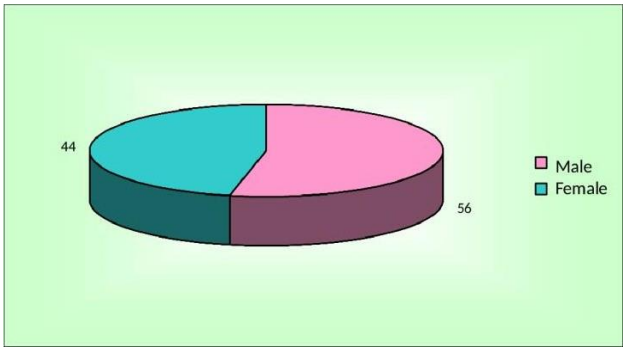

Figure 1: Sex distribution among the surgical jaundice cases.

Of the 100 cases in this study 67 patient presented with malignant causes (67%), out of which carcinoma head of pancreas was commonest in 40 (59.7%) cases, and out of 33 cases (33%) of benign cause of surgical jaundice (Table 1), the commonest cause was choledocholithiasis in 18 cases (54.5%). In malignant jaundice the most common symptom was jaundice 95.5%, loss of weight 88.05%. In benign surgical jaundice the commonest symptom was pain abdomen 100%, fever with chills 100%, jaundice 90.9%.

Table 1: Causes of surgical jaundice cases.

	No. of patients	Percentage
A. Malignant cause	67	67
Ca head of pancreas	40	59.7
Periampullary Ca	10	14.9
Cholangiocarcinoma	10	14.9
Secondaries in liver	6	8.9
Porta hepatic metastases		1.6
B. Benign causes	33	33
Choledocholithiasis	18	54.5
Benign biliary stricture	12	36.3
Choledochal cyst	3	9.2
Total	100	100

Jaundice was seen in 94patients (94%) the duration of jaundice varied from 3 days to 3 months about 6 cases (6%) had jaundice of less than 1-month duration. Pain abdomen was present in 93 cases (93%). The pain was felt in the epigastrium and radiates to the right hypochondrium in 25 cases (26.7%). Pain was recurrent in 20 cases (20%) and continuous with minor fluctuation in intensity in 44 cases (47.8%). Dark urine was seen in 52 cases (52%). Pale coloured stool was seen in 51 cases (51%). Loss of appetite and weight was observed in 62 cases (62%). Itching was noticed in 28 cases (28%). Fever with chills in 43 cases (43.3%) and mass abdomen in 30 cases (30%)shown in (Figure 2).

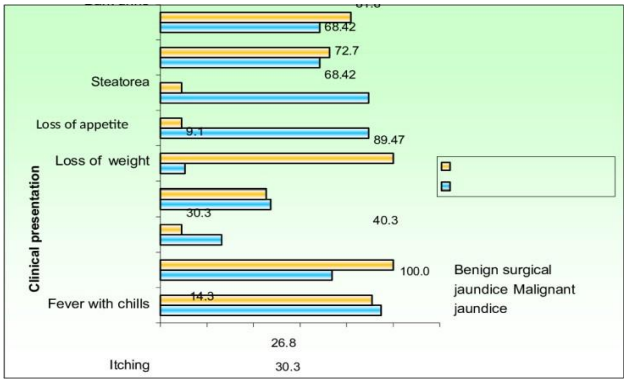

Figure 2: Clinical presentation in benign and malignant surgical jaundice.

In this study (Table 2) the mean total bilirubin in malignant jaundice was 20.9±6.7mg/dl. Mean alkaline phosphatase in malignant jaundice was 284.5±127.5IU/L. Serum bilirubin was elevated in 98 patients. Total bilirubin was below 29.6mg/dl and the direct fraction being the predominant one, the mean total bilirubin was 14.5mg/dl, and mean direct bilirubin was 11.5mg/dl. Alkaline phosphatase was elevated in 96 patients (96%). The level varied from 79IU/L to 557IU/L the mean level was 242.7IU/L about 3-4 times the upper limit. SGOT

and SGPT was elevated in 96 patients (96%). The level varied from 20U/L and 22U/L to 255U/L and 391U/L respectively the average level of SGOT was 108.2U/L and SGPT was 124.1U/L. The urine examination for bile salts and bile pigment were positive in all malignant jaundice cases and out of benign obstruction it was positive in 81 cases (81%). Ultrasonography done on all the cases (Table 3) showed dilated common bile duct in 93 cases (93%), and dilated intra hepatic biliary radicals in 83 cases (83%), information about the liver metastases, pancreatic masses, and ascites was assessed in 35 cases (35%).

Table 2: Mean and range values of liver function test in surgical jaundice cases.

	Total	Total bilirubin	Direct bilirubin	Indirect bilirubin	Alkaline phosphatase	SGOT iu/l	SGPT iu/l
Malignant jaundice	67	20.9±6.7 (0.8-29.6)	16.7±5.3 (0.6-23.6)	4.2±1.4 (0.2-6)	284.5±127.5 (79-557)	118±55.9 (20-255)	124.2±59 (22-308)
Benign surgical jaundice	33	(2.3-19.4)	(1.5-15.4)	(0.5-4)	(125-405)	(25-245)	(29-391)
	100	14.5 (0.8-29.6)	11.5 (0.6-23.6)	3.0 (0.2-6)	242.7 (79-557)	108.2 (20-255)	124.1 (22-391)

Table 3: Ultrasonographic findings in cases of surgical jaundice.

	Total cases	Dilated CBD	Dilated intra-biliary tree	Distended gall GB	Stone in CBD	Mass abdomen	Ascites
Malignant	67	63 (94.7%)	56 (84.2%)	52 (79%)	4 (5.3%)	32 (47.4%)	36 (52.6%)
Benign	33	30 (90.9%)	27 (81.8%)	9 (27.3%)	21 (63.6%)		6 (18.2%)
Total	100	93 (93%)	83 (83%)	61 (61%)	29 (29%)	31 (32%)	42 (42%)

DISCUSSION

In this clinical study of 100 cases of surgical jaundice, the age distribution range between 3-75 years. The youngest patients were 3 years with choledochal cyst and oldest was 75year with carcinoma head of pancreas. The mean age was 56 years and there were 56 male patients (56%), and 44 female patients (44%). The results obtained were compared with previously conducted study. In present study of 100 cases of surgical jaundice there was slight male predominance at sex ratio 1:0.78 which correlates with similar studies by Pain JA 1:0.76 and Parks RW at 1: 0.98.[6,7] The sex ratio of malignant jaundice was 1:0.9 with slight male predominance. This was compared with various authors. Lillemoe KD, Cameron JL. In Mangot's abdominal operation has stated that there was slight male predilection in malignant jaundice.[8] Steer ML in Sabiston textbook of surgery reported that malignant jaundice was common in men than women.[13] Russel RCG Surgical resection for cancer of the pancreas reported that male and female are affected to the same degree.[9] It was inferred that sex ratio is equalizing in malignant jaundice. In present study carcinoma head of pancreas was 59.7%, Choledocholithiasis was 54.5%, Cholangiocarcinoma was 14.9%, Benign biliary stricture was 36.3%, and porta hepatis metastases was 1 and periampullary carcinoma was 14.9%. This result correlates with study conducted by Parks RW et al who studied 121 patients during January 1986 to December 1994 reported that various causes of obstructive jaundice as carcinoma of head of pancreas 34.7%, choledocholithiasis 20.7%, cholangiocarcinoma 99%, benign biliary stricture 4.1%, and porta hepatis metastases 1.7%.[7] In the present study there were 67 cases of malignant jaundice, which includes carcinoma head of pancreas (40), periampullary carcinoma (10), cholangio carcinoma (10), secondaries in liver (6); and porta hepatis metastases (l). The age range was between 12- 75 years, mean age was 57.21 years, with 80% of cases were between the age group of 50-80 years. Of the 33 cases of benign extra hepatic biliary tract disease which included choledocholithiasis (18), benign biliary stricture (12), choledochal cyst (3), the age range was between 3-72 years with mean age of 52.45 years. In present study the presenting symptom and signs in malignant jaundice is jaundice 95%, abdominal pain 74%, loss of weight 89%, pruritus 47%, fever cholangitis 10%, hepatomegaly 67% and epigastric mass in 32%. This result correlates with study conducted by Warren et al who studied 191 patients and reported that the presenting symptoms in malignant jaundice as follows abdominal pain 82.8%, loss of weight 90%, pruritus 41.3%, fever 4.9%, hepatomegaly 64.4%.[10] Brooks et al stated that epigastric mass was present in 18%. Van Wagensveld BA et al who studied 126 patients and reported jaundice as a presenting symptom in 90%, loss of weight in 82%.[11,12]

In present study there were 18 cases of choledocholithiasis with presentation as jaundice in 85.7% pain abdomen in 100%, fever with chills in 100%, lightening of the stool in 85.7%, darkening of urine in 85.7%, and itching in 28.6%. Abrendt SA, Pitt HA in Sabiston textbook of surgery stated the presentation of choledocholithiasis includes biliary colic, jaundice, lightening of the stool and darkening of the urine with fever and chills.[13] In present study there were 12 cases of

benign biliary stricture, 2 cases of post-operative biliary stricture, and the lone case following chronic pancreatitis presented with jaundice in 100%, pain abdomen in 100%, itching in 100%, fever with chills in 100%, loss of appetite and weight in 33.3%, and steatorrhea in 66.7%. In this study there was only one case of choledocal cyst presented at the age of 3 years with jaundice, pain abdomen, mass abdomen, fever, loss of weight and appetite. Lypsett PA et al studied 1l children with choledochal cyst and reported that symptoms and signs at presentation were abdominal mass 8%, abdominal pain 36%, jaundice 64%, fever 18%, nausea/vomiting 18%.[14]

In present study the value of total bilirubin in malignant obstruction varied from 0.8mg/dl to 29.6mg/dl with the mean value at 20.9±6.7mg/dl. Of the 67 cases malignant obstruction the value of alkaline phosphatase varied from 79IU/L to 557 IU/L. With mean value of 284.5±127.5 IU/L, the value of SGOT varied from 20±255IU/L with mean value of 118±55.9IU/L Steer ML et al studied the laboratory values on 191 patients of carcinoma pancreas and reported that the mean values of total bilirubin were 8-9mg/dl, alkaline phosphatase 269.1IU/L, SGOT 111.5IU/L.[15] In present study of 18 cases of choledocholithiasis the value of total bilirubin varied from 2.3 mg/dl to 19.9 mg/dl with mean value of 10.3 mg/dl. Pellegrini et al has reported that serum bilirubin value >14 mg/dl are not usual caused by CBD stones.[16] In present study of 18 cases of choledocholithiasis the value of alkaline phosphatase ranged from 125IU/L to 405IU/L the mean value was 207IU/L Pellegrini et al reported that alkaline phosphatase more than 5 times or clinical jaundice present for longer than 1 month are uncommon manifestation of CBD stones.[16] In present study the ultrasound examination was done in all the patients and dilated CBD was noted in 94.7% of malignant disease, and 90.9% in benign cause, distended gall bladder was noted in 79% of malignant cause and 27.3% in benign cause, pancreatic mass was noted in 47.4% of malignant jaundice, ascites was noted in 52.6% of malignant jaundice. Gulati P et a1 concluded that sonographic finding characteristic of periampullary tumor are intrahepatic ductal dilatation, dilated CBD and hypoechoeic mass in ampullary region and distended gall bladder seen in more than 50% of the patients.[17]

In present study curative resection of malignant disease was done in 2 cases (10.5%). Whipples pancreatico duodenectomy was done in one case of periampullary carcinoma and pylorus preserving pancreatico duodenectomy was done in one case of cholangio carcinoma. Singh SM and Reber HA reported that only 10-15% of patients with pancreatic cancer have disease suitable for resection and possible cure by the time the diagnosis is made.[18]

In this study palliative cholecysto-jejunostomy and jejuno-jejunostomy bypass procedure was done in 35 cases of 67 malignant jaundice (52.2%) of which 40 cases of carcinoma head of pancreas, 10 cases of periampullary carcinoma, 1 case with porta hepatis metastases and secondaries in liver each. 20 cases presented in the late stage who were not fit for any procedure and 6 were referred to cancer center, each from carcinoma head of pancreas and cholangio carcinoma. Singh SM and Reber HA reported that 85 90% of patients with malignant jaundice requires some form of palliation.[18] In this study 10 (14.9%) patients died during follow up out of 67 malignant jaundice patients within 30 day which included 9 patients of carcinoma head of pancreas and 1 patients with secondary liver. Van Wagensveld BA et al reported that in obstructive jaundice postoperative mortality ranges from 2.5-19%.[12]

In present study both patient who underwent PD were followed till 6 months without mortality. In present study choledocholithotomy and T tube drainage was successfully done in all the 18 choledocholithiasis patients with recurrence in 3 cases (16.66%). Uchiyama et al reported that recurrence rates in choledocholithiasis was high when only choledochotomy and T tube drainage are performed in 10.3%.[19]

CONCLUSION

From present study of 100 cases of surgical jaundice the following can be concluded. Most common age group seen is between 50-80 years and the sex ratio is near equalizing. Most common cause of surgical jaundice is carcinoma head of pancreas and choledocholithiasis.

Jaundice is the most common presentation of surgical jaundice followed by pain abdomen, dark urine, pale stool and loss of weight. Early diagnosis and management helps to reduce the mortality and morbidity rate.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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