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A Clinicopathological Evaluation of Jaundice Due to Extra Hepatic Biliary Obstruction

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Abstract: Two third of cases of obstructive jaundice are caused by benign diseases like calculus diseases of biliary tract, Choledochol cyst, pancreas divisum, annular pancreas, primary sclerosing cholangitis and post-operative or post pancreatitis strictures. The present study aimed at a clinicopathological evaluation of a group of patients presenting with jaundice due to obstruction at the extra hepatic part of the billiary tree and results of treatment in short term follow up period. Study showed that malignant lesion causing obstructive jaundice was more common in the male and in the present series out of 17 male patients 12 (70.6%) had a malignant etiology in the background for the clinical sign of jaundice; while 55.5% (5 out of 9 patients) in female had benign lesion. For the detection of the cause of obstruction, to assess the degree of liver damage, to formulate the technical procedures to be adopted and ultimately to forecast the prognosis of the patient no single method as such is adequate. An overall study of the patient on clinical, biochemical, and radiological aspects along with the observations made at laparotomy jointly contribute to adopt the nature of operative procedures to be performed to relieve the biliary obstruction. The results of treatment for the malignant obstruction as compared to the benign one are very frustrating.

Keywords: Jaundice, obstructive jaundice, extra hepatic biliary obstruction, benign, malignant, percuteneous trans-hepatic cholengiography, laparotomy

INTRODUCTION

Jaundice is frequently the most significant complaints of patients suffering from obstructive lesions of the extra-hepatic ductal system and mechanical blockage resulting in the impairment of excretion of bile in the extra-hepatic bile duct can be located anywhere from the junction of the right and left hepatic duct to the end portion of the common bile duct at the duodenum [1].

Acute obstruction of the extrahepatic ducts causes gross proximal duct dilatation, and elevated levels of ornithine carbamyl transferase, bilirubin, and alkaline phosphatase. Slow progressive obstruction causes variable proximal duct dilatation and in these cases bilirubin, alkaline phosphatase, and ornithine carbamyl transferase return to normal, despite the presence of severe though incomplete obstruction of the common duct and microscopic findings of biliary cirrhosis [1].

Clinical assessment of patients with obstructive jaundice usually proceed through two phases

- Determination that extra-hepatic surgical jaundice is present
- Identification of the site and nature of obstruction as a prelude to surgical exploration

The clinical setting of cholestasis or failure of biliary flow may be due to biliary obstruction by mechanical means or by metabolic factors in the hepatic cells. Intrahepatic cholestasis generally occurs at the level of the hepatocyte or biliary canalicular membrane. Causes include hepatocellular disease (eg, viral hepatitis, drug-induced hepatitis), drug-induced cholestasis, biliary cirrhosis, and alcoholic liver disease.

In hepatocellular disease, interference in the 3 major steps of bilirubin metabolism, ie, uptake, conjugation, and excretion, usually occurs. Excretion is the rate-limiting step and is usually impaired to the greatest extent. As a result, conjugated bilirubin predominates in the serum [2].

Extrahepatic obstruction to the flow of bile may occur within the ducts or secondary to external compression. Overall, gallstones are the most common cause of biliary obstruction. Other causes of blockage within the ducts include malignancy, infection, and biliary cirrhosis. External compression of the ducts may occur secondary to inflammation (eg, pancreatitis) and malignancy. Regardless of the cause, the physical obstruction causes a predominantly conjugated hyperbilirubinemia [2, 3].

Glenn F [4] pointed out a surgeon`s evaluation of a jaundiced patient should provide conclusive information relative to the following points:

- Confirmation that jaundice is due to obstruction
- Correlation of the clinical manifestations- is the degree of jaundice minimal or intense? Has it been intermittent or constant? Is it increasing, decreasing or seemingly stationary?
- Exact location of the lesion
- Determination of the nature of obstruction

Thus when a patient presents with jaundice the first task of the clinician is to determine whether it is due to hepatocellular or obstructive in origin and if obstructive whether it is due to stone, benign stricture or malignant condition. Determination of the type of lesion before the hepatic damage is too far advanced is of paramount importance.

AIMS & OBJECTIVES

The present study aims at a clinicopathological evaluation of a group of patients presenting with jaundice due to obstruction at the extra hepatic part of the billiary tree related to the following points:

- The frequency with which the common etiological agents were encountered
- The value of studying the clinical features, in correlation with pathological lesions establishment of diagnosis, of course with the help of investigations usually done.
- The results of treatment in short term follow up period.

MATERIALS AND METHODS

This study was performed in a tertiary care teaching hospital, Haldia, West Bengal during the session 2013-15 and was based on a series of 26 cases admitted in the Surgical Ward for treatment of obstructive jaundice due to extrahepatic biliary obstruction. Institutional Ethics Committee approval and individual subject written informed consent was taken. Visible icterus with hyperbilirubinaemia and acholic stools were taken to be essential criteria for patients suspected to be suffering from obstructive jaundice. They were then admitted and thoroughly investigations were carried out to determine the presence, degree and cause of obstruction and subsequent treatment were planned accordingly. The clinical course of the patient, the findings of investigations, used and results of treatment received, were all recorded to a proforma.

On admission detailed clinical history was elicited including any past history attacks of jaundice and any history of local outbreak of jaundice (to exclude viral hepatitis). The age, sex, social status and food habits of the patients were recorded. All symptoms with their durations and treatment received before hospitalization including history of any operation were noted. The abdominal examination was made keeping in mind Courvoisier`s law which states that palpably enlarged gallbladder in a jaundiced patient was probably not due to stone impacted in the common bile duct as in that case the gall bladder was usually fibrotic due to previous cholecystitis.

Careful assessment of the general condition of the patient was made. This was followed by routine investigations like Hb, TLC and DLC, ESR, blood sugar, blood urea, urine & stool analysis. The urine was specially examined for the presence of bile pigment and bile salts. Color of stool and presence or absence of occult blood in the stool was taken note of.

Serum biochemical tests to assess the liver function like bilirubin level was carried out in all patients and in 10 normal individuals, picked up from medical and paramedical staffs to serve as control.

Radiological investigations performed were:

- Straight X –ray abdomen
- Ba-meal X-ray of the stomach and duodenum in some cases pre & post -operatively in cases where sphinctroplasty was done for stenosed condition of sphincter of Oddi to show the Ba-reflux.
- Straight X-ray chest to detect any tumor (primary or secondary) and any elevation and irregularity of the right dome of diaphragm due to enlarged nodular liver.
- Percutaneous trans hepatic cholangiography

Histopathological Examination

Liver tissue was obtained by Wedge resection at laparotomy. Malignant growth causing obstruction was examined at laparotomy before resection, and operability of the individual cases was determined, operation was planned and performed accordingly. Tissue thus obtained was preserved in buffered formalin

solution of pH 7 and processed by conventional methods. Histopathological examinations were done mainly for the purpose of confirmation of diagnosis, while routine light microscopic studies were done to have an idea about the hepatic structural changes no attempt was made to correlate the hepatic histopathological changes in detail with the clinical and laboratory aids for assessment of hepatic dysfunction.

Radiological

Oral cholecystography and intravenous cholangiography were not performed because of higher value of serum bilirubin in the present series (over 5 mg %) for in jaundice if the serum bilirubin level was 3 mg per 100 c.c. non visualization of biliary tree was expected.

Percuteneous trans-hepatic cholengiography: This test was performed in cases where the site and nature of obstruction could not be made confidently with the aid of clinical features and biochemical investigations. P.T.C was carried out in the radiological dept. on the date fixed for operation and patients were operated upon after the wet films were evaluated.

Procedure

With the patient in the supine position, the part was painted and prepared. Inj Xylocaine (1%) without adrenaline was used to infiltrate an area 2 cm below and to the right of the xiphisternum. The infiltration was done deeply upto the peritoneum. The relationship of the colon and liver edge was determined by fluoroscopically to avoid possible puncture of an interposed colon. A small knife wound was made at the site selected dor insertion of the needle to facilitate its easy passage. A malleable, short beveled needle, about 12 cm in length and of 1 mm bore with well fitting stilet was introduced through the infiltrated area during apnea in a slightly cephalad direction, and entry into the liver was denoted by an increased resistance. The needle was rapidly advanced to a length of about 8-9cm and the patient was asked to breathe quietly. The stilet was gradually withdrawn and suction was applied by means of a 50 ml syringe. This suction process was maintained while the needle was being withdrawn. When bile was apirated as much as possible was drawn to lower the tension in the biliary tree.

About 20 ml of sodium iothalmate was injected and plates were exposed with the patient in the erect posture and the needle was withdrawn after aspirating as much of the dye as possible. It however, blie duct could not be penetrated in the first attempt, a second and if required a 3rd attempts were made at a different position slightly to the right and to the left respectively.

Follow-up: each patient was followed up to variable periods during their stay in hospital and afterwards during their visit to the surgical OPD as far as possible.

RESULTS

The feature of obstructive jaundice due to extra hepatic biliary obstruction in a group of 26 patients, studied for this thesis work have been analyzed as follows:

Table-1: Overall age incidence among study participants (n=26)

Age group	No of cases	Percentage
21- 30 years	1	3.8%
31- 40 years	5	19.23%
41- 50 years	10	38.64%
51- 60 years	7	26.92%
60 years and above	3	11.37%

Table-2: Age incidence in benign & malignant causes of obstruction [n=26]

Age group	Benign cases		Malignant Cases	
	No. of cases	%	No. of cases	%
21- 30 years	1	10 %	0	0%
31- 40 years	4	40%	1	6.25%
41- 50 years	3	30%	7	43.75%
51- 60 years	2	20%	5	31.25%
60 years and above	0	0	3	18.75%
Total	10		16	

In this series the age of the patients varied from 25- 72 yrs. The youngest was 25 yrs old and the oldest 72 yrs old. The age group (41 - 50) constitutes by far the largest number in the present series; accounting for 38.67% of the total series, out of total 26 cases, 10 cases belongs to this group of age (Table-1). Table-2 shows that in the series under consideration the maximum number of patients 4 (40%) with benign causes for obstructive jaundice were obtained in the age group (31-40 yrs), having 3 (30%) of the total 10 cases

presenting with benign causes for obstructive jaundice due to extrahepatic biliary obstruction. There was preponderance of male in the present series; 17 cases were male (65.38%) while female are 9 (34.62%).

Table-3: Sex distribution in benign and malignant causes of jaundice

Etiology	Male			Female		
	No of cases	% of group	% of total	No of cases	% of group	% of total
Malignant	12	70.6%	46.15%	4	44.5%	15.38%
Benign	5	29.4 %	19.23%	5	55.5%	19.24%
Total	17	100	65.38%	9	100	34.62%

Table-3 shows that malignant lesion causing obstructive jaundice is more common in the male and in the present series out of 17 male patients 12 (70.6%) had a malignant etiology in the background for the clinical sign of jaundice; while 55.5% (5 out of 9 patients) in female had benign lesion.

Table-4: Frequency distribution of the etiological agents among cases

Malignant				Benign			
Cause	No.	% of group	% of Total	**Cause**	No.	% of group	% of Total
CA head of Pancreas	10	62.50	38.52	Only calculus	6	60	23.2
CA Gall Bladder	2	12.50	7.69	Calculus stenosis of sphincter of Oddi	2	20	7.69
CA Periampullary Region	1	6.25	3.80	Calculus with chronic pancreatitis	1	10	3.8
CA Bile duct	2	12.50	7.69	Stricture of CBD	1	10	3.8
Metastatic lymphnode at the porta hepatitis with primary unknown	1	6.25	3.80				
Total	16	100	61.50		10	100	38.50

In this series of 26 cases, 16 had malignant jaundice (61.5%) and 10 had benign jaundice (38.5%). It appears that carcinoma of the head of pancreas was the single largest group in cases of malignant causes of jaundice and comprises 62.5% of the causes in malignant group (Table 4).

Table-5: Distribution of jaundice in present case series

Duration	No of cases	Percentage
Below 1 Month	2	7.69
1- 3 month	11	43.60
3-6 month	5	19.63
6 - 9month	4	15.70
9 month – 1 year	2	7.69
1 year to 2 tear	2	7.69

About 43.6% of cases sought advice during 1-3 months after they first noticed jaundice (Table-5).

Paroxysmal attacks of severe pain in the right hypochondrium radiating to the right shoulder having no relation with food, slightly relieved by bilious vomiting and having no residual pain have been considered as biliary colic. Maximum 7 patients out of 10 had experienced such type of pain in the benign group and have calculus disease of the biliary system. Seven out of 16 (43.75%) patients of the malignant group and 2 out of 10 patients (20%) in the benign group had clinically palpable gallbladder (Table-7).

It is evident from the table 8 that the lower values of serum bilirubin obtained with patients whose duration of illness is below 1 month as well as 6-9 months. Similarly higher values above 20 mg% were obtained in patients with duration of jaundice 1-3 months, 6-9 months and 1-2 years. Thus there was no correlation between duration of illness and level of serum billirubin (total).

It is clear from the table 10 that out of 14 patients in whom PTC was attempted, achievements as regards technical success in puncturing the bile ducts and visualization of biliary tree were obtained in 13 (92.85%) and conclusive information after visualization of biliary tree were obtained in all of them. Operative death means death within first 30 days after operation [30].

Table-6: Frequency of common clinical features in the present series

Clinical features	Malignant		Benign	
	No. of cases	%	No. of cases	%
Onset				
• Sudden	1	6.25%	7	70%
• Insidious	15	93.75%	3	30%
• Jaundice only	1	6.25%	0	0
Pain				
• Biliary colic	1	6.25%	7	70%
• Pain other than biliary colic	9	56.25%	3	30%
Fever	3	18.75%	6	60%
Anorexia	12	75%	4	40%
Vomiting	2	6.79%	8	80%
Pruritus	12	75%	4	40%
Wt. loss	16	100%	5	50%
Signs				
• Palpable gall bladder	7	43.75%	2	20%
• Palpable liver	16	100%	8	80%
• Palpable spleen	0	0	0	0
• Ascites	1	6.25%	0	0
• Occult blood in stool	1	6.25%	0	0
• Bile in urine	16	100%	10	100%

Table-7: Number of cases having palpable Gall bladder in the present series

Disease	Palpable Gall bladder
Ca head of Pancrease	5
Ca periampullary region	1
Ca CBD	1
Calculus disease	2
Total	9

Table-8: Serum bilirubin level in relation to duration of jaundice

Duration	5- 10 mg %		10- 15 mg %		15 – 20 mg %		Above 20 mg %	
	No	%	No	%	No	%	No	%
Below 1 month	2	25	0	0	0	0	0	0
1 – 3 month	4	50	3	37.5	3	42.85	1	33.3
3 – 6 month	0	0	3	37.5	1	14.28	1	33.3
6 – 9 month	1	12.5	1	12.5	2	28.5	0	0
9month – 1 year	0	0	1	12.5	1	14.28	0	0
1 year – 2 year	1	12.5	0	0	0	0	1	33.3
Total	8		8		7		3	

Table-9: Serum bilirubin in benign and malignant cases

Benign			**Malignant**		
Bilirubin level	No.	%	Bilirubin level	No.	%
5-10 mg%	4	40%	5-10 mg%	4	25%
10-15%	3	30%	10-15 mg%	**5**	31.25%
15-20 mg%	2	20%	15-20%	5	31.25%
Above 20 mg%	1	10%	Above 20 mg%	2	12.50%

Table-10: Success rate of percutaneous transhepatic cholangiogram in the present series (PTC)

Final Diagnosis	No. of cases where PTC was done	Technical success with visualization of billiary tree		Complications Inconclusive
		No	Percent	
CA Head of Pancreas	8	7	87.5	Severe pain during the procedure and immediately afterwards in one case.
Calculus disease of biliary tree	3	3	100	
CA CBD	2	2	100	
Stricture CBD	1	1	100	
Total	14	13		

Table-11: Accuracy of diagnosis in the present series on clinical grounds and with the help of investigations performed

Malignant Disease	**Total**	**Correct diagnosis**		**Benign Disease**	**Total**	**Correct diagnosis**	
		No.	**%**			**No.**	**%**
CA head of pancreas	10	8	80	Only calculus dis of biliary tract	6	4	66.66
CA of CBD	2	1	50	Stricture CBD	1	1	100
CA Peri-ampullary region	1	1	100	Calculus with stenosis of sphincter Oddi	2	0	0
CA gall bladder	2	0	0	Calculus with chronic pancreatitis	1	0	0
Metastatic lymph node at porta hepatis with primary unknown	1	0		-	-	-	-
Total	16	10			10	5	

Table-12: Surgical treatment done in the present series with operative death

Malignant Disease			**Benign Disease**		
Types of operation	No.	Op. death	Types of operation	No.	Op. death
Laparotomy and biopsy further procedure not possible	5	2	Cholecystectomy with choledocholithotomy	5	1
			Cholecystectomy with choledocholithotomy with choledochoduodenostomy	1	0
Cholecystojejunostomy with anterior gastrojejunostomy	1	1	Cholecystectomy with choledocholithotomy with sphincteroplasty	2	0
Cholecystojejunostomy with jejuno-jejunostomy	9	2	Hepatico jejunostomy with jejuno-jejunostomy	1	0
Cholecystectomy with choledochoduodenostomy	1	0	Cholecystectomy & hepatico jejunostomy with jejuno-jejunostomy	1	1
Total	16	5		10	2

Table-13: Showing the total survival period after operation in the malignant group

Survival period	No. of cases	Percentage
Less than 1 week	2	12.5%
1 wk- 1 month	3	18.75%
1 month- 3 months	4	25%
3 months- 6 months	3	18.75%
Follow up incomplete living for		
More than 2 months	2	12.5%
More than 8 months	1	6.25%
Lost to follow up	1	6.25%
Total	16	100

Fig-1: After bile is aspirated to confirm the location, contrast is injected to perform a cholangiograph.

Fig-2: Choledocholithotomy T tube drainage common bile duct in laparoscopic cholecystectomy

DISCUSSION

The present series of 26 patients had clinical signs and symptoms of obstructive jaundice due to extrahepatic biliary obstruction. Out of these 26 patients, 16 (61.5%) were due to malignancy and 10 (38.5%) were due to benign causes. In a review of 256 patients with jaundice in 1956, Bruce found incidence of malignant jaundice to the extent of 25% and calculus was responsible in 51% of cases. Although Fish JC *et al*., [5], in a study of 500 cases of extra hepatic biliary tract obstruction, found tumors of the pancreas and periampullary region in only 39% of cases.

Evans [6] in a series of 93 cases found malignancy in 53 i.e. about 63% of cases. Ferrante WA *et al*., [7] in a series of 197 patients with surgical jaundice, found malignant obstruction in 59% of cases, while benign causes were reported in 41% of cases. Age variations in the age group are common and expected and have been reported by various authors. Santos *et al*., [8] in their series noticed that the incidence ranged from 11 yrs to 68 yrs. Vakil *et al*., [9] had all but one of their patients in between 35-65 yrs of age. Elderly persons in the present series had a comparative higher rate of malignant diseases for the jaundice and this finding is in conformity with existing belief that the older age group is more susceptible to malignant disease though no age is immune [10, 11].

The male preponderance was observed in the present series (65.38%). The male and female sex distribution has been differently reported by different workers. Santos *et al*., in a series of 46 cases found 26 female patients while males were 20 in number but Drake and Beal [12] on the other hand found 18 male patients and 3 female patients in their series- thus a male preponderance was 6:1. Malignancy has been found in 70.6% of males and 44.5% of the females in the present groups while 29.4% of males and 55.5% of females have benign obstruction. This higher rate of malignancy in the male patients in the present series is in consistent with the fact that the malignant neoplasm of the pancreas, ampulla of vater and CBD affects the male patients more commonly [13] and male

preponderance of the present series can probably be due to this fact also.

Santos *et al*., [8] noticed the duration of illness ranging from days to 4 years in their series, while Drake and Beal [12] had their patients with duration of illness varying from 2 wks to 3 months. Vakil *et al*., [9] found duration of illness to lie between 1 month to 5 years. Thus it is evident that although no patient with duration of illness as prolonged as 4 years or 5 years had been encountered in the present series.

The single largest pathological entity was the CA of head of pancreas and comprises 62.5% the group (10 out of 16) and 38.52% of the total series respectively. Flemma *et al*., [14] reported the condition in 17 (36%) out of 47 cases of obstructive jaundice in whom PTC were done. In Evans series [6] this condition figured to the extent of 32% approx (30 out of 93 cases). Ritchie *et al*., [15] reported the incidence to the extent of 38.6% (15 out of 43 cases).

James [16] had 31.7% (33 out of 104 cases), Green et al 1976, found the condition to the extent of 39.2% of his total series of 197 patients and 66.6% of the malignant group. Thus the finding as regards increased frequency of CA head of pancreas was in consistent with published reports of different authors. Two cases of bile duct (extrahepatic) carcinoma have been identified in the present series and such finding is in accordance with Evans [6]. Vasilescu C [17] reported 3 cases of periampullary carcinoma in a series of 47 cases of obstructive jaundice. Ritchie *et al*., [15] in a series of 177 found 3 cases of cancer gall bladder, only 1.5% of the total and 2.5% of the group. Stones in the common bile duct were the commonest cause for obstructive jaundice in the present series in the benign group. Thus infact 9 out of 10 cases had calculus obstruction in the biliary passage for their obstructive jaundice, representing 34.6% of the total series. Flemma et al., [14] found 7 cases of Choledocholithiasis out of 47 cases. Ritchie et al., [15] found 18 cases of calculus obstruction of the biliary tree in a series of 54 cases (33.3%) of jaundice 43 of which were obstructive. Bruce [29] found the incidence of calculus obstruction to the extent of 51% in a series of 256 cases of jaundice.

Gray *et al*., 1951 [18] had found that benign stricture was common in females and the patients were less than 50 years old in 70% of cases. Santos *et al*., [8] reported 7 cases of benign stenosis of CBD out of 47 patients. Pain abdomen either in the form of biliary colic or otherwise was present in a fairly big number of patients. Clocok [19] reported biliary colic in 91.5% of calculus disease. Zimmon DS [20] also noticed high frequency of acute pain in gall bladder disease which is in conformity with the present finding [20]. Pisters PW [21] noted painless jaundice in 48% of cases of CA of head pancreas while painless progressive jaundice with palpable gall bladder was found in only 32.5% of cases of cancer periampullary region.

Zaki Hussain *et al*., [22] study showed 38 patients with features of extrahepatic biliary obstruction, of these 15 (39.5%) patients suffered from benign diseases while those having malignant diseases were 23 (60.5%).The age varied from 21 years (minimum) to 85 years (maximum). The mean age being 50.49 years. Amongst the patients, 22 (58 %) were females and 16 (42%) were males. The reasons for obstruction were stones in the common bile ducts in 14 (37%) patients, chronic pancreatitis in 1 (2.5%), CBD ca in 3 (8%), gall bladder ca in 6 (16%), ca pancreas in 11 (37%), metastatic ca in 1 (2.5%) and periampulary ca in 2 (5%) patients. The presentation of obstructive jaundice is very high in the 5th and 6th decade of life 10. The mean age of 50.49 years, median being 49.75 years. The number of females suffering from the disease is more than the males (58% vs 42%). The carcinoma of gallbladder had a very high female preponderance and male to female ratio was 1:5 in our study, while the reported ratio is 1:3 and 1:54. The carcinoma of pancreas and CBD stones is more prevalent amongst the females. The male to female ratio being 5:6 and 5:9 respectively. The carcinoma of CBD and periampullary carcinoma on the other hand is commoner in males. The ratio being 2:1 and 2:0 respectively.

Despite technological advances, only 20% of periampullary tumors are found to be resectable at the time of presentation due to their invasiveness, late symptom appearance, and onset in elderly people [23-25]. The most common cause of malignant distal biliary obstruction is pancreatic cancer, as 70–90% of patients will develop jaundice during the course of their disease. Pancreatic cancer is usually advanced at presentation, and curative resection is possible in < 15% of patients. If a patient is to undergo early surgical resection, biliary drainage is not prerequisite. Early surgery without preoperative biliary drainage does not increase the risk of complications, as compared with preoperative biliary drainage, followed by surgery. Malignant biliary strictures most commonly arise from either pancreatic cancer or cholangiocarcinoma. Often the first presentation of these cancers is with jaundice and biliary obstruction. Unfortunately most of these also present in the late stages of the disease [26].

Exploratory laparotomy should be considered an important part of the diagnostic plan, especially if diagnostic imaging findings are equivocal but clinical signs or laboratory findings are still suggestive or if diagnostic imaging is unavailable. Palpation of the gallbladder can often allow assessment of obstruction, which is usually accompanied by bile duct distension. If gallbladder palpation does not allow assessment of patency or if there is a discontinuity to the biliary tract resulting in bile leakage upon palpation of the

gallbladder, catheterization of the biliary tract is necessary to assess patency [25, 26].

Study had shown that between 10% to 18% of people undergoing cholecystectomy for gallstones have common bile duct stones. Treatment of the bile duct stones can be conducted as open cholecystectomy plus open common bile duct exploration or laparoscopic cholecystectomy plus laparoscopic common bile duct exploration (LC + LCBDE) versus pre- or post-cholecystectomy endoscopic retrograde cholangiopancreatography (ERCP) in two stages, usually combined with either sphincterotomy (commonest) or sphincteroplasty (papillary dilatation) for common bile duct clearance [27]. The benefits and harms of the different approaches are not known.

Excision and choledochojejunostomy was done Comparing with S. Agal *et al*., of Mumbai who studied 62 cases of malignant aetiology and M. Kannan *et al*., of Chennai who studied 455 cases of both benign and malignant etiology there is more or less equal age incidence. Evaluation of obstructive jaundice is common but challenging radiological problem. The aim of the imaging is to diagnose biliary obstruction by identifying dilatation of intra and extra-hepatic biliary channels; to delineate the level of obstruction. We had 16 deaths in the follow up and those under evaluation in malignant group [28]. These patients were mainly in their advanced stage of their disease and the underlying pathology was mostly advanced carcinoma CBD, carcinoma of the gallbladder, Pancreatic and peri ampullary malignancies.

CONCLUSION

Extrahepatic biliary obstruction is a common surgical problem usually caused by choledocholithiasis, sclerosing cholangitis, biliary strictures, periampulary growth and carcinoma head of the pancreas. In the present study, different varieties of malignant diseases causing obstruction to the extra-hepatic part of biliary tree have taken upperhand over the benign causes viz calculus or stricture. For the detection of the cause of obstruction, to assess the degree of liver damage, to formulate the technical procedures to be adopted and ultimately to forecast the prognosis of the patient no single method as such is adequate.

An overall study of the patient on clinical, biochemical, and radiological aspects along with the observations made at laparotomy jointly contribute to adopt the nature of operative procedures to be performed to relieve the biliary obstruction. The results of treatment for the malignant obstruction as compared to the benign one are very frustrating.

The differential diagnoses of jaundice remain a challenge for the primary care physician and specialists alike, Laboratory tests combined with newer noninvasive imaging studies usually differentiate the intrahepatic from the extra hepatic cholestasis. As with awareness and better health care provision in our setup more cases of biliary obstruction are being diagnosed. A significant number of cases of obstructive jaundice are caused by malignancies, and most are unresectable for cure, The optimal form of palliation depends on multiple factors and is still debated by experts. Early detection of benign cases and their management is likely to substantially reduce the incidence of extrahepatic biliary obstruction. Early detection leads to early management, which reduces the complications and hence helps in reducing the morbidity and mortality associated with the condition.

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