ORIGINAL ARTICLE

FREQUENCY OF COMMON CAUSES OF SURGICAL JAUNDICE

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ABSTRACT

Objective: To determine the frequency of common causes of surgical jaundice.

Material and Methods: This study was conducted at Department of Surgery, Khyber Teaching Hospital, Peshawar, Pakistan. Duration of the study was from February 2016 to February 2017 in which a total of 131 patients were observed. All patients presenting to OPD with Clinical jaundice having serum Bilirubin more than 1.20 mg/dl, having Alkaline Phosphatase levels more than 306 mg/dl, Age 15 or above and both male and female were included. The diagnosis in all these cases was based on history, clinical examination and routine laboratory investigations including Liver Function Tests (LFT's).Ultrasound was undertaken in all patients to diagnose the exact cause whether choledocholithiasis or masses obstructing the lumen of common bile duct and in cases where mass was found biopsy was taken and sent for histopathology to detect carcinoma head of pancreas, carcinoma gall bladder, or cholangiocarinoma. All histopathology specimens were reported by an expert histopathologist. All these patients were prepared for surgery 2 to 3 days after admission with injection vitamin K, intravenous antibiotics and infusion Mannitol, hydration status checked and corrected. After preparation all the patients were operated on the next list.

Results: In this study mean age was 37.02 ± 13.5 SD. Out of 131 patients; there were 43.5% males and 56.5% females. The mean serum bilirubin level was 17.88 ± 6.03.The mean serum alkaline phosphatase level was 461 ± 77.3.On investigations; choledocholithiasis was recorded in 38.2%, ca Head of Pancreas in 24.4%, ca gallbladder in 16% and cholangiocarcinoma in 21.4%.

Conclusion: Gallstone is a common cause of surgical jaundice in our population followed by ca head of pancreas.

Key Words: Surgical jaundice, gallstones, choledocholithiasis, ca pancreas, ca gallbladder, cholangiocarcinoma, bilirubin, alkaline phosphatase.

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INTRODUCTION

Obstructive Jaundice is a common surgical problem that occurs when there is an obstruction to the passage of conjugated bilirubin from liver cells to intestine[1]. It is among the most challenging conditions managed by general surgeons and contributes significantly to high morbidity and mortality[2]. As patients with obstructive jaundice have high morbidity and mortality, early diagnosis of the cause of obstruction is very important especially in malignant cases, as resection is only possible at that stage.

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Jaundice also known as icterus[3], is a yellowish pigmentation of the skin, the conjunctival membranes over the sclera (whites of the eyes), and other mucous membranes caused by high blood bilirubin levels[4]. The main symptom of jaundice is a yellowish discoloration of the white area of the eye and the skin. Urine is dark in colour[5]. This hyper bilirubinemia subsequently causes bilirubin to accumulate in the gray matter of the central nervous system, potentially causing irreversible neurological damage leading to a condition known as kernicterus. Concentration of bilirubin in blood plasma is normally below 1.2 mg/dL (<25μmol/L). A concentration higher than approx. 3 mg/dL (>50μmol/L) leads to jaundice[6]. Obstruction in the drainage system of bile could be partial or complete results in complete blockage or reduction in bile flow in to the duodenum. Normally bile is formed in hepatic canaliculi and is excreted at a rate of 40 ml/hr, from there it is drained into right and left hepatic ducts. The two ducts unite to from common hepatic duct (<2.5cm), which later joins cystic duct (3cm) to form common bile duct (CBD), 7.5cm in

length. Injury to common bile duct causes increased levels of serum alkaline phosphatase i.e.>306 mg/dl[7].

There are various causes due to which the normal flow of bile is obstructed. Choledocholithiasis is the presence of stones inside the lumen of CBD, and leads to outflow obstruction of bile. Carcinoma Head of pancreas impinges upon the lumen of CBD, whereas cholangiocarcinoma and carcinoma gall bladder causes intraluminal obstruction. Strictures and pancreatitis are less common causes. The most common causes are gallstones in the common bile duct, and pancreatic cancer in the head of the pancreas. Also, a group of parasites known as "liver flukes" can live in the common bile duct, causing surgical jaundice. Other causes include strictures of the common bile duct, biliary atresia, cholangiocarcinoma, pancreatitis, cholestasis of pregnancy, and pancreatic pseudocysts. A rare cause of surgical jaundice is Mirizzi's syndrome. Greater than 70% of people with gallstones are asymptomatic and are found incidentally on ultrasound. Studies have shown that 10% of those people will develop symptoms within five years of diagnosis and 20% within 20 years[8]. The best initial diagnostic tools to identify the cause and level of obstruction is ultrasound[6,7,11,12]. It is the initial investigation of choice for demonstrating gall stones but less sensitive then MRCP (magnetic resonance cholangio pancreaticography) in demonstrating CBD stones and it differentiates obstructive from non obstructive jaundice[8,9,10]. Ultrasound can also pick masses in the pancreas, liver and CBD though less sensitive than CT (computed tomography) scan[13,14]. In a study out of 65 cases of surgical jaundice, overall leading cause was CBD stones (35%),The second commonest cause was found to be carcinoma head of pancreas (20%),Carcinoma of common bile duct was 14%, and carcinoma gall bladder was 4%[15].

The aim of my study is to determine the common causes of surgical jaundice. The rationale behind doing this study is to see the current trends of causes of patients presenting with surgical jaundice. The results of this study will be disseminated to other general surgeons and also to general practitioners to aware them about the common causes of surgical jaundice and recommendations will be suggested regarding starting baseline treatments of patients with surgical jaundice keeping in front the results of this study. This will help our population in some relief before the patient reaches the tertiary care facility and will help us to reduce the morbidity associated with surgical jaundice.

MATERIAL AND METHODS

This study was conducted at Department of Surgery, Khyber Teaching Hospital, Peshawar, Pakistan. Duration of the study was from February 2016 to February 2017 in which a total of 131 patients were observed by using 11.66% proportion of cholangiocarcinoma, 95% confidence level and 5.5% margin of error under WHO software for sample size determination. More over Non probability consecutive sampling was done. All patients presenting to OPD with Clinical jaundice having serum Bilirubin more than 1.20 mg/dl, having Alkaline Phosphatase levels more than 306 mg/dl, Age 15 or above and both male and female were included. All jaundice patients with indirect hyperbilirubinemia or intrahepatic cholestasis of pregnancy, detected by normal serum patient is Alkaline Phosphatase. Bone Diseases in which serum Alkaline Phosphatase is elevated, but clinically the patient is not jaundiced. Hepatitis: which is detected by elevated serum Bilirubin but Alkaline Phosphatase levels will be normal were excluded. Approval from the ethical committee was obtained and all patients meeting inclusion criteria were approached after informed written consent. The patients included in the study were directly admitted from the Out Patient Department (OPD) or shifted from Medical units with the diagnosis of surgical jaundice. The diagnosis in all these cases was based on history, clinical examination and routine laboratory investigations including Liver Function Tests (LFT's).Ultrasound was done in all patients to diagnose the exact cause whether choledocholithiasis or masses obstructing the lumen of common bile duct and in cases where mass was found biopsy was taken and sent for histopathology to detect carcinoma head of pancreas, carcinoma gall bladder, or cholangiocarinoma. All ultrasounds were done by an expert radiologist. All histopathology specimens were reported by expert histopathologist. All these patients were prepared for surgery for 2 to 3 days after admission with injection vitamin K, intravenous antibiotics and infusion Mannitol, hydration status checked and corrected. After preparation all the patients were operated on the next list. All the above information were recorded in a predesigned proforma including name, age, sex and contact address. Exclusion criteria was followed strictly to control confounders and bias in the study results. All the data was analyzed in SPSS v 10.0 Mean ± standard deviations were calculated for continuous data i.e. Age, Alkaline Phosphatase levels, and serum Bilirubin levels. Frequencies and percentages were calculated for nominal and categorical data i.e. gender, Choledocholethiasis, Carcinoma Head of Pancreas, Carcinoma gall bladder and Cholangicarcinoma. All the results were presented as tables.

RESULTS

In this study age distribution among 131 patients were analyzed as 41(31.3%) patients were in age range 15 to 25 years, 21(16%) patients were in age range 26-35 years, 55(19.1%) patients were in age range 36-45 years, 44(33.6%) patients were in age range 46 years and above. Mean age was 37.02 ± 13.5 SD. Fifty seven (43.5%) patients were male while 74(56.5%) patients were female .The mean serum bilirubin level was 17.88 + 6.03. The distribution of bilirubin in different categories is elaborated in Table 1.The mean serum alkaline

Table 1: Serum Bilirubin levels

	n	Range	Minimum	Maximum	Mean	Std. Deviation
Serum Bilirubin Levels	131	20.50	7.50	28.00	17.8817	6.03434
Bilirubin Levels		**Frequency**		**Percent**		
up to 10		19		14.5		
11 to 15		34		26.0		
16 to 20		23		17.6		
21 & above		55		42.0		
Total		131		100.0		

Table 2: Serum alkaline phosphatase levels

	n	Range	Minimum	Maximum	Mean	Std. Deviation
Serum Alkaline Phosphatase Levels	131	290.00	360.00	650.00	461.0687	77.37523
Bilirubin Levels		**Frequency**		**Percent**		
up to 400		39		29.8		
401 to 500		53		40.5		
501 & higher		39		29.8		
Total		131		100.0		

phosphatase level was 461 ± 77. The distribution of ALP in different categories is elaborated in Table 2.On investigations, choledocholithiasis was recorded in 38.2%, ca Head of Pancreas in 24.4%, ca gallbladder in 16% and cholangiocarcinoma in 21.4%.

DISCUSSION

Obstructive Jaundice is a common surgical problem that occurs when there is an obstruction to the passage of conjugated bilirubin from liver cells to intestine1.It is among the most challenging conditions managed by general surgeons and contributes significantly to high morbidity and mortality[2]. As patients with obstructive jaundice have high morbidity and mortality, early diagnosis of the cause of obstruction is very important especially in malignant cases, as resection is only possible at that stage.[1]

In this study mean age was 37.02 ± 13.5 SD. Out of 131 patients, there were 43.5% males and 56.5% females. The mean serum bilirubin level was 17.88 ± 6.03. The mean serum alkaline phosphatase level was 461 ± 77.3. On investigations, choledocholithiasis was recorded in 38.2%, ca Head of Pancreas in 24.4%, ca gallbladder in 16% and cholangiocarcinoma in 21.4%. In a study out of 65 cases of surgical jaundice, overall leading cause was CBD stones (35%), the second commonest cause was found to be carcinoma head of pancreas (20%), Carcinoma of common bile duct was 14%, and carcinoma gall bladder was 4%[15].

Similar results were found in a study done by Cheema KM, Ahmad F, Gondal SH in which the values of bilirubin and alkaline phosphatase were found to be higher in the malignant cases.[16] Similar results were found in another study done by Muzaffar Aziz et al for the evaluation of the etiological spectrum of obstructive jaundice showed the incidence of malignant jaundice in 84% and benign in 16% of the patients[17]. Similar results were found in another study conducted by Fatima et al[18] in which choledocholithiasis was found to be the commonest cause accounting for 47.2% of cases.

Similar results were found in another study conducted by Sharma et al[19] in a study of 429 patients reported that about 75% malignant etiology whereas remaining 25% had benign cause. Carcinoma of gall bladder (28.7%) was reported to be the commonest etiology followed by carcinoma of pancreas (26.5%), Choledocholithiasis (12.4%), cholangiocarcinoma (10.8%), benign strictures (10.8%) and ampullary carcinoma (9.8%).

Similar results were found in another study of 82 patients from China revealed cholangiocarcinoma as the leading cause of malignant obstructive jaundice (27%) followed by pancreatic cancer (24%), metastatic carcinoma (21%) gall bladder carcinoma (17%) and hepatocellular carcinoma (10%).[20]

Similar results were found in another study of 241 patients with obstructive jaundice 64% of the patients had malignant cause. Carcinoma of pancreas was the most common malignant cause seen in 46% of the patients followed by cholangiocarcinoma (29%), periampullary carcinoma (3%) and other malignancies (23%). Of the 87 patients with a benign obstruction, 65% had Choledocholithiasis, 8% had biliary strictures, 6% had primary sclerosing cholangitis and 21% had other causes[21].

CONCLUSION

Gallstones is a common cause of surgical jaundice in our population followed by ca head of pancreas.

RECOMMENDATION

More advanced diagnostic tools must be validated to capture these causes well in time before complications develop.

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CONFLICT OF INTEREST: Authors declare no conflict of interest

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

Jan QA: Idea critical review and bibliography.

Waheed MR: Data Collection.

Haq Iu: Data Collection.

Khan Y: Statistics.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.