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Frequency of common bile duct strictures in patients presenting with obstructive jaundice in Ayub teaching hospital

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Abstract---Background; Obstructive jaundice in simple terms means the outflow of bile has been obstructed anywhere from the liver to the duodenum. It is caused by obstruction, blockage and/or compression of common bile duct (CBD) and/or biliary tract that leads to incomplete excretion of bile into the intestine. Patients with obstructive jaundice usually present with Complains of abdominal pain, yellow discoloration of skin and/or eyes, pale stools, dark colored urine, nausea, vomiting and pruritus. Objective: To determine frequency of common bile duct strictures in patients presenting with obstructive jaundice in Ayub teaching hospital. Material and Method. This Cross Sectional Study was conducted in the department of Gastroenterology, ATH, Abbottabad from 15th September 2020 to 15th March 2021. A total of 135 patients of both gender presenting with jaundice and having serum bilirubin ≥1.1 mg/dl, alkaline

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phosphatase ≥140 IU/L along with evidence of obstruction of common bile duct were included in the study. Presence of CBD stricture was confirmed through Ultrasonography or CT abdomen. Results: Age range in this study was from 20 to 80 years with mean age of 44.651±12.90 years. Female gender was dominant with 61.5% patients. Common bile duct strictures was seen in 9.6% patients. Conclusion: Biliary strictures was one of the most common cause of obstructive jaundice in our set-up.

Keywords---obstructive jaundice, common bile duct strictures, frequency.

Introduction

Obstructive jaundice is defined as conjugated hyperbilirubinemia secondary to obstruction to the flow of bile from the liver. [1] It is caused by obstruction, blockage and/or compression of common bile duct (CBD) and/or biliary tract that leads to incomplete excretion of bile into the intestine. [2] Patients complains of abdominal pain, yellow discoloration of skin and/or eyes, pale stools, dark colored urine, nausea, vomiting and itching. [1] Obstructive jaundice can be caused by a vast number of conditions that are broadly divided into intrahepatic and/or extrahepatic causes. Extrahepatic conditions which constitute the major causes include but not limited to are the stones in the bile duct, biliary strictures, biliary track malignancies, parasites, primary sclerosing cholangitis and pancreatic pathologies [3]

Biliary stricture which is abnormal narrowing of common bile duct is one of the important intraductal etiologies of obstructive jaundice. In a study by 4 Kurian et al, 22 % of cases of obstructive jaundice were caused by biliary strictures.[3] Causes of biliary stricture can be divided into benign and malignant causes. A wide variety of infectious, inflammatory, congenital, autoimmune, and postsurgical disorders cause benign strictures.[4] Surgery-related benign biliary strictures most frequently results from Laparoscopic Cholecystectomy, bile-duct surgery, and liver transplantation. [5] Autoimmune conditions leading to conjugated hyperbilirubinemia include primary biliary sclerosis, primary sclerosing cholangitis (PSC), IgG4 related sclerosing cholangitis and eosinophilic cholangitis.[4] Similarly, malignancies leading to obstructive jaundice include pancreatic adenocarcinoma, cholangiocarcinoma, malignancy of the ampulla or gall bladder. [6] The study is considered due to rarity of research in Pakistan in recent times to show the frequency of biliary strictures in patients presenting with obstructive jaundice. This study will add to the existing body of knowledge and may be used by health professionals to take steps for prevention of this problem.

Materials and Methods

This cross sectional study was conducted from 15th September 2020 to 15th march 2021 in the department of Gastroenterology, ATH, Abbottabad. A total of 135 patients were enrolled in the study through non probability consecutive sampling. Sample size was calculated using the WHO software with the following

assumptions: Confidence level = 95% Anticipated proportion of CBD stricture = 22%3 Absolute precision = 7%. Patients in age range of 20-80 years and Patients presenting with jaundice and having serum bilirubin ≥1.1 mg/dl, alkaline phosphatase ≥140 IU/L along with evidence of obstruction of common bile duct on ultrasonography of the

Abdomen were included in the study. Patients with Chronic liver disease and pregnant patients were excluded from the study. Data was collected by the researcher himself. Prior approval of the Hospital Ethical Committee was obtained. Fully informed consent from the patients were taken before data collection. All the information was noted on the proforma. The patients fulfilling the inclusion criteria were inducted from inpatients of Gastroenterology department. The name, age and gender was noted. Obstructive jaundice was confirmed by the presence of Clinically apparent jaundice with serum bilirubin ≥1.1 mg/dl and alkaline phosphatase ≥140 IU/L along with evidence of presence of obstruction of common bile duct on ultrasonography of the abdomen. Presence of CBD stricture was confirmed through Ultrasonography or CT abdomen. Serum bilirubin, alkaline phosphatase, and ultrasound abdomen was done free of cost in Ayub Teaching hospital Abbottabad. Exclusion criteria was fulfilled on basis of detail history. The data was analyzed by SPSS. Numeric variables like age was described in terms of mean ± standard deviation. Categorical variables like gender and biliary stricture was presented as frequencies and percentage. Data was stratified by age and gender with respect to biliary strictures. Post stratification Chi-square test at 5% level of significance was used. All the results were presented as tables and graphs.

Results

Age range in this study was from 20 to 80 years with mean age of 44.651±12.90 years as shown in Table-I. Female gender was dominant with 61.5% patients as shown in Table-II. Common bile duct strictures was seen in 9.6% patients as shown in Table III. Stratification of biliary stricture with respect to age and gender are shown in Table-IV and V respectively.

Table I
Mean±SD of patients according to age, gestational age and weight
n=135

	Demographics	Mean±SD
1	Age(years)	44.651±12.90

Table II
Frequency and %age of patients according to Gender
n=135

	Gender	Frequency	%age
	Male	52	38.5 %
	Female	83	61.5 %
	Total	135	100 %

Table III
Frequency and %age of patients according to Common bile duct strictures
n=135

Common bile duct Strictures		Frequency	%age
	Yes	13	9.6 %
	No	122	90.4 %
	Total	135	100 %

Table IV
Stratification of Common bile duct strictures with respect to age

Age (years)		Common bile duct strictures		p-value
		Yes	No	
	20-50	1(1.2%)	84(98.8%)	0.000
	51-80	12(24%)	38(76%)	
Total		13(9.6%)	122(90.4%)	

Table V
Stratification of Common bile duct strictures with respect to gender

Gender		Common bile duct strictures		p-value
		Yes	No	
	Male	13(25%)	39(75%)	0.000
	Female	0(0%)	83(100%)	
Total		13(9.6%)	122(90.4%)	

Discussion

Obstructive jaundice is a condition in which the flow of bile to the small intestine is obstructed leading to high levels of conjugated bilirubin in the blood. Since obstructive jaundice occurs due to certain other pathology that obstruct the bile flow, therefore finding the cause is of utmost importance. For this purpose, numerous investigations are performed, with ultrasound being usually the first investigation. However ultrasound abdomen has certain limitations and is operator dependent. [7] Endoscopic ultrasound on the other had is more reliable with an accuracy of over 90%. [8, 9] Other investigation include computed tomography (CT) which again has variable sensitivity, limited availability and involves radiation exposure.

In our study common bile duct strictures was seen in 9.6% patients with obstructive jaundice. In a study by Kurian et al, 22 % of cases of obstructive jaundice were caused by biliary strictures.[3] In a local study by Iqbal J, et al has shown that frequency of biliary stricture was 8% in patients with obstructive jaundice. [10] Obstructive jaundice was more prevalent among females in our study but the frequency of biliary strictures was more in males. Its main causes are gall stones and malignancy. Patients with high direct bilirubin levels in blood

should always be investigated for causes of conjugated hyperbilirubinemia especially elucidating the biliary channel. [10, 11] Patients with obstructive jaundice have a higher likelihood of malignancy than those with normal serum bilirubin levels. Abnormal liver tests, including elevated serum alkaline phosphatase levels, were not associated with greater risk of malignancy in patients with isolated dilation of the CBD [12-16] and we believe that, even in patients with biliary strictures, the presence of abnormal liver chemistries does not have the same clinical significance or risk of malignancy as those with obstructive jaundice.

Numerous tumor markers are used to exclude or confirm the diagnosis of hepatobiliary malignancy. Some of these tumor markers include the serum CA19-9 and carcinoembryonic antigen (CEA). For instance, high serum CA 19 – 9 have high sensitivity for biliary tumors (74%), however the specificity is unacceptably low [11, 17]. This is because there are numerous other conditions like gastric carcinoma, cholangitis and liver fibrosis that also leads to high serum CA 19-9 levels. Another tumor marker, CEA levels have also been elucidated for cholangiocarcinoma. According to one study, its sensitivity was 34–67 % and specificity was 78–94%, for biliary track malignancies [17]. Recently, more tumor markers have been evaluated for biliary track malignancy. These include transthyretin (TTR), interleukin-6 (IL-6), mucin-5AC (MUC5AC) and matrix metalloproteinase-7 (MMP-7) [18-21]. However, up until now their significance has been reported to be limited and are therefore not recommended in clinical practice for the purpose of diagnosing cholangiocarcinoma. The worldwide frequency of biliary strictures is on the increase due to bile duct injuries complicated by laparoscopic cholecystectomy. Numerous steps are being taken worldwide to reduce the risk of bile duct injuries. [22] Due to these steps, now that it is reported that the frequency of biliary injury after laparoscopic cholecystectomy is 0.7%. Most of these injuries are minor injuries or bile leaks.

Conclusion

Common bile duct strictures was one of the most common cause of Obstructive in our set-up. Obstructive jaundice was more prevalent among females in our study by the frequency of biliary strictures was more in males

Authors' Contributions

Zabih ullah: Literature Review, manuscript drafting.
Hafizullah khan: Data collection & statistical analysis
ummarah: Data Interpretation
afsar : Proof reading
shawan asad: Manuscript drafting,
Adil naseer: Expert opinion and manuscript revision.

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