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MALIGNANT CAUSES OF SURGICAL JAUNDICE: A SINGLE CENTER STUDY

Qurat-ul-ain[1], Zohaib Zaheer[2], Sana Maqsood[3]

Women Medical Officer, THQ Hospital Lalian, Chiniot, **E-mail**: qurat969@gmail.com

[2] Medical Officer, THQ Hospital Lalian, Chiniot, **E-mail**: dr.zohaibzaheer@gmail.com

[3] Women Medical Officer, THQ hospital Lalian, Chiniot, **E-mail**: Sna_sindhu001@yahoo.com

Abstract:

Surgical jaundice is a common surgical issue that is caused by an obstruction to the passage of conjugated bilirubin from liver cells to the intestine. Surgical jaundice management has been posing diagnostic and therapeutic challenges to general surgeons specially working in countries with limited resources. Jaundice owing to biliary obstruction can occur by different group of diseases that may be either benign or malignant.

OBJECTIVE: *To determine the frequency of malignancy and its types in patients presenting with surgical jaundice in a tertiary care hospital.*

STUDY DESIGN: *Cross-sectional Survey.*

SETTING: *Surgical ward, Allied hospital Faisalabad*

DURATION OF STUDY*: Six month from Oct, 2018 - April 11, 2019*

DATA COLLECTION PROCEDURE: *The patients fulfilling inclusion criteria were admitted from out-patient department. The diagnosis of surgical jaundice was made on the basis of history, clinical examination, hematological and biochemical reports and radiological investigations. The patients were admitted in north surgical ward. The patients was further investigated and managed according to the guidelines. A written informed consent was collected before the study. All patients were managed as per guidelines for surgical jaundice with injection Vitamin K intramuscular, well hydration with intravenous fluids, avoidance of constipation by lactulose or neomycin, vitals and urine output monitoring and prophylactic antibiotics. The demographic information including name, age, gender, address and outcome variable (frequency of malignancy in patients presenting with surgical jaundice) was collected through proforma.*

RESULTS: *The mean age of patients was 49.96 ± 16.54 years with minimum and maximum age as 18 and 80 years. There were 51(53.7%) male and 44(46.3%) female cases. A total of 19(20%) cases had BMI < 30 and 76(80%) cases had BMI ≥ 30. A total of 50(52.6%) cases had malignancy and 45(47.4%) cases were not diagnosed of malignancy. Among malignancy, 14(28%) cases had CA Gallbladder, 4(8%) cases had CA head of Pancreas, 9(18%) cases had Peri-ampullary carcinoma, 7(14%) case had Cholangiocarcinoma, 6(12%) cases had Klastkin tumor, 5(10%) cases had Hepatocellular carcinoma and 5(10%) cases had Metastatic tumor.*

CONCLUSION

Through the findings of this study more than half of the cases i.e. 52.6% cases had malignancy in patients presenting with surgical jaundice. The most common type of malignancy was CA Gallbladder (28%) followed by Peri-ampullary carcinoma (18%), Cholangiocarcinoma (14%), Klastkin tumor (12%), Hepatocellular carcinoma and Metastatic tumor (10%)each, and CA head of Pancreas (8%). So, keeping high frequency of malignancy in mind and the clear picture in of its types patients with surgical jaundice must be treated accordingly to have a better prognosis.

Keywords: *Surgical jaundice, FNAC, malignancy, Gallbladder, Peri-ampullary carcinoma, Klastkin tumor, Hepatocellular carcinoma, Metastatic tumor, Pancreas*

Corresponding author:

Qurat-ul-ain,

Women Medical Officer,

THQ Hospital Lalian, Chiniot,

E-mail*: qurat969@gmail.com*

QR code

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INTRODUCTION:

Surgical jaundice is a common surgical issue that is caused by an obstruction to the passage of conjugated bilirubin from liver cells to the intestine.[1] Jaundice owing to biliary obstruction can occur by different group of diseases that may be either benign or malignant.[2] Studies have depicted that surgical jaundice due to benign diseases is more common in females while malignant pathology is found more in males.[3] Malignant pathology for surgical jaundice has been found to be 74.2% in male in comparison to 48% in females.[4] The incidence and presentation of malignant pathology for the clinical scenario is usually in older age group.[5]

According to a study benign causes of surgical jaundice are 56.7% and malignant 43.3%.[6]The common presenting symptoms of surgical jaundice are jaundice associated with clay colored stool (89.6%), pruritis (77.6%), weight loss (61.2%), right upper abdominal pain (58.6%), scratch marks (53.6%) and palpable abdominal mass (51.8%).[7] The malignant diseases causing surgical jaundice are carcinoma of head of pancreas, peri-ampullary carcinoma, cholangiocarcinoma, klastkin tumor, carcinoma of gallbladder, hepatocellular carcinoma and metastatic carcinomas.[8] Surgical malignancy in a patient with jaundice is diagnosed by detailed history, clinical examination, biochemical laboratory tests and radiological and gastroenterological procedures followed by histopathological reports.[9] The biochemical investigations done was liver function tests showing high serum bilirubin and alkaline phosphatase levels. Transcutaneous ultrasound is cost effective and readily available with sensitivity of 97% in detecting site and size of the lesion so is considered as first choice radiological investigation.[8] Further computerized tomographic scanning, magnetic resonance imaging, endoscopic endo-luminal ultrasound, endoscopic retrograde cholangiopancreatography (ERCP), magnetic resonance cholangiopancreatography (MRCP), percutaneous trans-hepatic cholangiography (PTC) followed by brush biopsy and cytology almost confirms the diagnosis.[10]

Surgical jaundice is not a conclusive diagnosis and a timely investigation to explicate the exact etiology is of utmost importance because pathological changes like secondary biliary cirrhosis may occur if obstruction is not relieved.[11] Surgical jaundice management has been posing diagnostic and therapeutic challenges to general surgeons specially working in countries with limited resources. The challenges are late presentation of the disease and dearth of modern diagnostic and therapeutic facilities.[12] The mortality and morbidity of biliary obstruction depends on the cause of obstruction , detailed analysis of the factors which affects the morbidity and mortality in patients with surgical jaundice in each society is essential. Because the better understanding of the factors responsible for increased morbidity and mortality lead to better management and improved survival. Common malignant causes of obstruction are carcinoma of gallbladder infiltrating into biliary system 52%, CA Pancreas 31%,cholangiocarcinoma 10% and hepatoma 7%.[14]

The rationale of my study was to find the different causes of surgical jaundice in our population in the order of occurrence of frequency, as in our part of the world the constituent of diet including fiber, roughage and refined diet is markedly different from that of western world. Moreover, the literature data available from our part of the world is insufficient. The results can add to the existing body of knowledge. They may be used by policy makers, planners and health managers to institute meaningful interventions for various types of tumors causing surgical jaundice depending upon their prevalence.

MATERIAL AND METHODS:

This cross-sectional study was done in Allied hospital Faisalabad during Oct, 2018 to April, 2019. Patients were selected using non-probability consecutive sampling. Sample size of 95 patients was estimated by using 95% confidence level, 10% absolute precision with expected percentage of malignant condition as 43.3%.[6] All patients of either gender and age 18-80 years presenting in OPD and Surgical Emergency Surgical jaundice will be included in the study.

All patients with unconjugated hyperbilirubinemia confirmed on bilirubin segregation were excluded. A written informed consent was collected before the study. The diagnosis of surgical jaundice was made on the basis of history, clinical examination, hematological and biochemical reports and radiological investigations. The patients were admitted in north surgical ward. Patients were further investigated and managed according to the guidelines. All patients were managed as per guidelines for surgical jaundice with injection Vitamin K intramuscular, well hydration with intravenous fluids, avoidance of constipation by lactulose or neomycin, vitals and urine output monitoring and prophylactic antibiotics. The demographic information including name, age, gender, address and outcome variable (frequency of malignancy in patients presenting with surgical jaundice) was collected through proforma.

All the collected data was entered to SPSS-21 version and was analyzed. Quantitative variables like age, stratification diagnosis was described with mean (standard deviation). Qualitative variables like gender and presentation were described as frequencies, percentages and proportions. Data was stratified for age, gender, duration of disease and BMI. Post stratification Chi square test was applied while P value≤0.05 was considered significant.

RESULTS:

The mean age of patients was 49.96 ± 16.54 years with minimum and maximum age as 18 and 80 years. There were 36(37.9%) cases who were < 45 years old and 59(62.1%) cases were 45-80 years old. There were 51(53.7%) male and 44(46.3%) female cases. A total of 19(20%) cases had BMI < 30 and 76(80%) cases had BMI ≥ 30. There were 37(38.9%) cases who had duration of disease since < 6 weeks and 58(61.1%) cases had duration of disease ≥ 6 weeks. A total of 50(52.6%) cases had malignancy and 45(47.4%) cases were not diagnosed of malignancy.

Among malignancy, 14(28%) cases had CA Gallbladder, 4(8%) cases had CA head of Pancreas, 9(18%) cases had Peri-ampullary carcinoma, 7(14%) case had Cholangiocarcinoma, 6(12%) cases had Klastkin tumor, 5(10%) cases had Hepatocellular carcinoma and 5(10%) cases had Metastatic tumor.

When data was stratified for age, gender, BMI and duration of disease, the frequency of malignancy was statistically same in both age groups, in both genders, in obese and non-obese and with respect to duration of disease, p-value > 0.05. **Table - 1,2,3,4**

Moreover, the types of malignancy were also statistically same in both age groups, in both genders, in obese and non-obese and with respect to duration of disease, p-value > 0.05. **Table - 5,6,7,8**

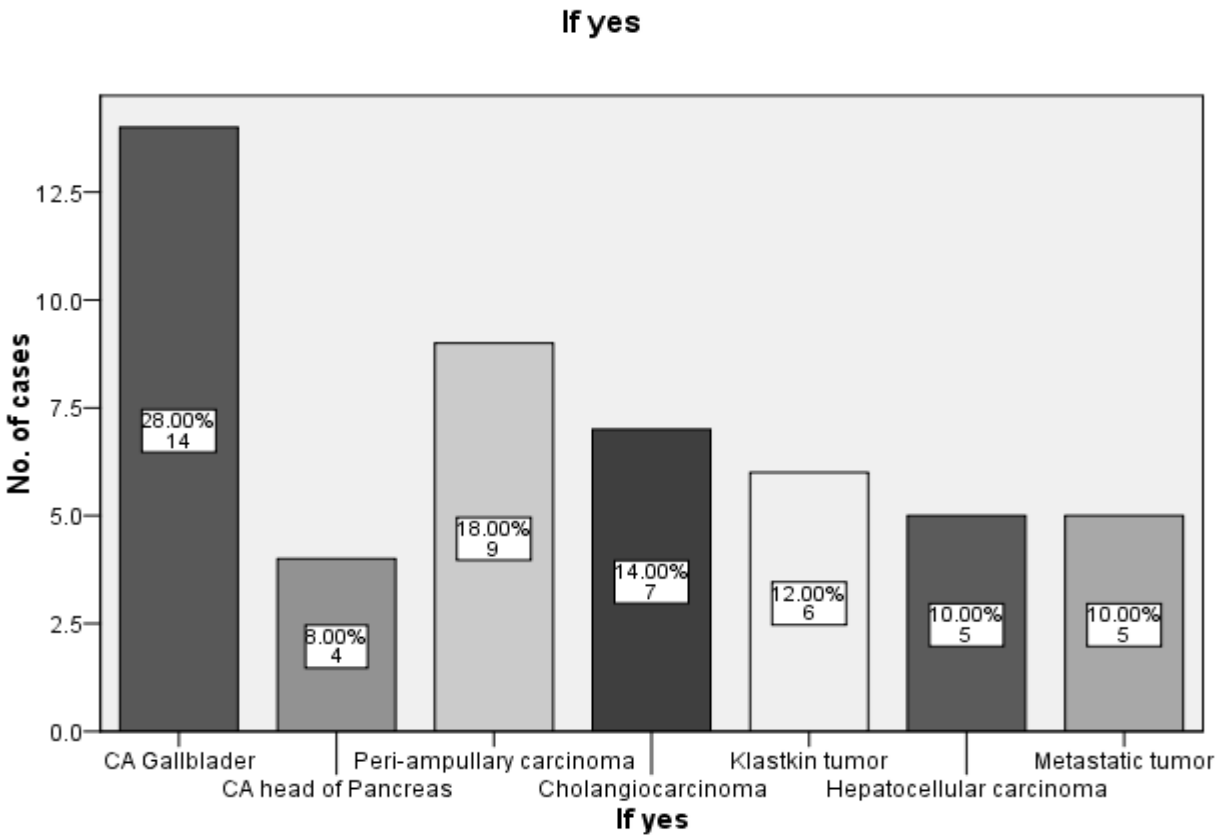

Fig-1: Types of malignancy

Table-1: Comparison of frequency of Malignancy with respect to age groups (years)

		Malignancy		Total
		Yes	No	
Age groups (years)	*<45*	16(44.4%)	20(55.6%)	36(100%)
	45-80	34(54.6%)	25(42.4%)	59(100%)
Total		50(52.6%)	45(47.4%)	95(100%)

Chi-square= 1.558, P-value= 0.212(Insignificant)

Table-2: Comparison of frequency of Malignancy with respect to Gender

		Malignancy		Total
		Yes	No	
Gender	*Male*	26(51%)	25(49%)	51(100%)
	Female	24(54.5%)	20(45.5%)	44(100%)
Total		50(52.6%)	45(47.4%)	95(100%)

Chi-square=0.120, P-value= 0.729(Insignificant)

Table-3: Comparison of frequency of Malignancy with respect to BMI

		Malignancy		Total
		Yes	No	
BMI	*< 30*	8(42.1%)	11(57.9%)	19(100%)
	≥30	42(55.3%)	34(44.7%)	76(100%)
Total		50(52.6%)	45(47.4%)	95(100%)

Chi-square=1.056, P-value= 0.304(Insignificant)

Table-4: Comparison of frequency of Malignancy with respect to duration of disease

		Malignancy		Total
		Yes	No	
Duration	*< 6 weeks*	20(54.1%)	17(45.9%)	37(100%)
	≥ 6 weeks	30(51.7%)	28(48.3%)	58(100%)
Total		50(52.6%)	45(47.4%)	95(100%)

Chi-square=0.049; P-value= 0.824(Insignificant)

Table-5: Comparison of types of malignancy with respect to age groups (years) [n= 50]

Types of malignancy	Age groups (years)		Total
	<45	45-80	
CA Gallbladder	5(31.2%)	9(26.5%)	14(28%)
CA head of Pancreas	1(6.2%)	3(8.8%)	4(8%)
Peri-ampullary carcinoma	3(18.8%)	6(17.6%)	9(18%)
Cholangiocarcinoma	3(18.8%)	4(11.8%)	7(14%)
Klastkin tumor	1(6.2%)	5(14.7%)	6(12%)
Hepatocellular carcinoma	1(6.2%)	4(11.8%)	5(10%)
Metastatic tumor	2(12.5%)	3(8.8%)	5(10%)
Total	16(100%)	34(100%)	50(100%)

Chi-square=1.692, P-value= 0.946(Insignificant)

Table-6: Comparison of types of malignancy with respect to gender [n= 50]

Types of malignancy	Gender		Total
	Male	Female	
CA Gallbladder	6(23.1%)	8(33.3%)	14(28%)
CA head of Pancreas	2(7.7%)	2(8.3%)	4(8%)
Peri-ampullary carcinoma	6(23.1%)	3(12.5%)	9(18%)
Cholangiocarcinoma	3(11.5%)	4(16.7%)	7(14%)
Klastkin tumor	3(11.5%)	3(12.5%)	6(12%)
Hepatocellular carcinoma	3(11.5%)	2(8.3%)	5(10%)
Metastatic tumor	3(11.5%)	2(8.3%)	5(10%)
Total	26(100%)	24(100%)	50(100%)

Chi-square=1.751; P-value= 0.941(Insignificant)

Table-7: Comparison of types of malignancy with respect to BMI (years) [n= 50]

Types of malignancy	BMI		Total
	< 30	30 or more	
CA Gallbladder	1(12.5%)	13(31%)	14(28%)
CA head of Pancreas	0(0%)	4(9.5%)	4(8%)
Peri-ampullary carcinoma	2(25%)	7(16.7%)	9(18%)
Cholangiocarcinoma	1(12.5%)	6(14.3%)	7(14%)
Klastkin tumor	2(25%)	4(9.5%)	6(12%)
Hepatocellular carcinoma	2(25%)	3(7.1%)	5(10%)
Metastatic tumor	0(0%)	5(11.9%)	5(10%)
Total	8(100%)	42(100%)	50(100%)

Chi-square=6.290 ; P-value= 0.391(Insignificant)

Table-8: Comparison of types of malignancy with respect to duration of disease (weeks) [n= 50]

Types of malignancy	Duration		Total
	< 6 weeks	≥6 weeks	
CA Gallbladder	6(30%)	8(26.7%)	14(28%)
CA head of Pancreas	0(0%)	4(13.3%)	4(8%)
Peri-ampullary carcinoma	6(30%)	3(10%)	9(18%)
Cholangiocarcinoma	3(15%)	4(13.3%)	7(14%)
Klastkin tumor	1(5%)	5(16.7%)	6(12%)
Hepatocellular carcinoma	2(10%)	3(10%)	5(10%)
Metastatic tumor	2(10%)	3(10%)	5(10%)
Total	20(100%)	30(100%)	50(100%)

Chi-square=6.766; P-value= 0.343(Insignificant)

DISCUSSION:

Disorders of the biliary tract affect a significant portion of the worldwide population, and the overwhelming majority of cases are attributable to cholelithiasis (gallstones). In the United States, 20% of persons older than 65 years have gallstones, and 1 million newly diagnosed cases of gallstones are reported each year [15]. Biliary obstruction refers to the blockage of any duct that carries bile from the liver to the gallbladder or from the gallbladder to the small intestine. This can occur at various levels within the biliary system. The major signs and symptoms of biliary obstruction result directly from the failure of bile to reach its proper destination [16].

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. For the sake of simplicity, the primary focus of this article is mechanical causes of biliary obstruction, further separating them into

intrahepatic and extrahepatic causes. Stone disease is the most common cause of obstructive jaundice. Gallstones may pass through the common bile duct (CBD) and cause obstruction and symptoms of biliary colic and cholecystitis[17]. Larger stones can become lodged in the CBD and cause complete obstruction, with increased intraductal pressure throughout the biliary tree. Mirizzi syndrome is the presence of a stone impacted in the cystic duct or the gallbladder neck, causing inflammation, and external compression of the common hepatic duct and thus, biliary obstruction. Of biliary strictures, 95% are due to surgical trauma and 5% are due to external injury to the abdomen or pancreatitis or erosion of the duct by a gallstone. Stone disease is the most common cause of biliary strictures in patients who have not undergone an operation [18].

A tear in the duct causes bile leakage and predisposes the patient to a localized infection. In turn, this accentuates scar formation and the ultimate development of a fibrous stricture. Primary pancreatobiliary tract cancers and other local cancers that can cause compression of the biliary tract (e.g., liver, gallbladder) account for approximately 80,000 new cancer cases and an estimated 58,000 deaths in the United States [19].

Despite advances in diagnosis and treatment, the 5-year survival rate of the most commonly encountered malignancies, pancreatic cancer, and cholangiocarcinoma, remains dismal at< 5% [20].Malignant biliary tract obstruction can also arise from gallbladder, duodenal, and ampullary cancers; metastatic cancers; or malignant lymphadenopathy [21].

A study reported that Females outnumbered males by a ratio of 2:1. Calculus (85%) was the most common cause followed by malignant cause (10%). Maximum incidence was observed between 30-50 years age[22]. In current study the mean age of patients was 49.96 ± 16.54 years with minimum and maximum age as 18 and 80 years. There were 51(53.7%) male and 44(46.3%) female cases. The findings are comparable with above cited study.

In current study it was found that a total of 50(52.6%) cases had malignancy and 45(47.4%) cases were not diagnosed of malignancy. Among malignancy, 14(28%) cases had CA Gallbladder, 4(8%) cases had CA head of Pancreas, 9(18%) cases had Peri-ampullary carcinoma, 7(14%) case had Cholangiocarcinoma, 6(12%) cases had Klastkin tumor, 5(10%) cases had Hepatocellular carcinoma and 5(10%) cases had Metastatic tumor. Another study reported that common malignant causes of obstruction are carcinoma of gallbladder infiltrating into biliary system 52%, CA Pancreas 31%,cholangiocarcinoma 10% and hepatoma 7%.[14]

In current study we also found that CA Gallbladder was high in our population.

Recently a study is aimed to analyze age and sex distribution and incidence of malignant or benign causes in patients presented with obstructive jaundice. The result has showed that Obstructive jaundice is more prevalent in 5th and 6th decade of life and male to female ratio of 2:3. Malignancy (68%) tends to be more common than benign disease (32%) and among malignancies periampullary carcinoma and advanced GB carcinoma occurs with equal frequency of 32 cases. 46% patients of malignant a etiology presented in stage IV disease. Curative resection for periampullarytumours by whipples procedure was possible in 14% patients. Operative palliation by triple bypass was done in 11% and others were managed by appropriate another palliative modality. Adeno-carcinoma is most common histopathological variant. Choledocholithiasis (28%) is most common benign a etiology and was managed successfully by choledocholithotomy and T-tube insertion[23].

Similarly, another study was conducted to study the etiological spectrum, treatment outcome of obstructive jaundice. The result has demonstrated that Choledocholithiasis accounts for about 22% of the overall etiology of obstructive jaundice and about 73.3% of the benign causes. Periampullary carcinoma appears to be the most common cause accounting for 34% of malignancies[24].

Likewise, another study was done to see the incidence of malignant obstructive jaundice. A total of 84 patients (84%) were suffering from malignancy and 16 patients (16%) were suffering from benign diseases. The incidence of various malignancies was CA gall bladder 44 patients (52%), CA Pancreas 26 patients (31%), Cholangiocarcinoma 8(10%) and Hepatoma 6 patients (7%). Incidence of malignancy in obstructive jaundice is 84%, which gradually increases with the increasing age. The most common malignancy responsible for obstructive jaundice in female patients is CA gall bladder (52%) and in male patients is CA head of pancreas (31%)[25]. These findings are comparable with current study.

CONCLUSION

Through the findings of this study more than half of the cases i.e. 52.6% cases had malignancy in patients presenting with surgical jaundice. The most common type of malignancy was CA Gallbladder (28%) followed by Peri-ampullary carcinoma (18%), Cholangiocarcinoma (14%), Klastkin tumor (12%), Hepatocellular carcinoma and Metastatic tumor (10%) each, and CA head of

Pancreas (8%). So, keeping high frequency of malignancy in mind and the clear picture in of its types patients with surgical jaundice must be treated accordingly to have a better prognosis.

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