RESEARCH ARTICLE

The study of frequency of malignancy and its types in surgical jaundice; a tertiary care experience

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Abstract

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

Method: The cross-sectional study was conducted at the North Surgical Ward, Mayo Hospital, Lahore, Pakistan, from May 8 to November 8, 2020, and comprised patients of either gender with a diagnosis of surgical jaundice made on the basis of history, clinical examination, haematological and biochemical reports and radiological investigations. All patients were managed as per the guidelines for surgical jaundice with injection vitamin K intramuscular, hydration with intravenous fluids, avoidance of constipation by lactulose or neomycin, vitals and urine output monitoring and prophylactic antibiotics. Demographic data as well frequency of malignancy were noted using a predesigned proforma. Data was analysed using SPSS 21.

Results: Of the 95 patients, 51(53.7%) were male and 44(46.3%) were female. The overall mean age was 49.96±16.54 years (range: 18-80 years). A total of 19(20%) cases had body mass index <30. Malignancy was identified in 50(52.6%) cases; 14(28%) gallbladder, 4(8%) head of pancreas, 9(18%) peri-ampullary carcinoma, 7(14%) cholangiocarcinoma, 6(12%) Klastkin tumour, 5(10%) hepatocellular carcinoma, and 5(10%) metastatic tumour.

Conclusion: More than half of the surgical jaundice cases had malignancy, gallbladder being the most affected site.

Keywords: Surgical jaundice, FNAC, Peri-ampullary carcinoma, Klastkin tumour, Hepatocellular carcinoma.
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Introduction

Obstructive jaundice, a common issue on the surgical floor, occurs due to the occlusion of passage to conjugated bilirubin excreted by liver cells into the small bowel.[1] Jaundice caused by this biliary obstruction can be due to a combination or group of disorders either benign or malignant.[2] Various surveys have determined that surgical jaundice, when it happens as a result of any benign diseases, is more likely to be present in females while malignant causes are mostly presented in males.[3] Malignant causes of obstructive jaundice have been found to be around 74.2% in males, while and around 48% in females.[4] These malignant pathologies in the form of obstructive jaundice usually present in people of older age.[4]

Studies have shown that surgical jaundice caused due to benign causes account for 56.7% and those accounting for malignant causes reach about 43.3%.[5] The most common symptoms related to surgical jaundice are jaundice along with clay-coloured stool (89.6%), severe itching (77.6%), weight-loss (61.2%), right upper abdominal pain (58.6%), scratch marks (53.6%) and palpable abdominal mass (51.8%).[6] The malignant diseases causing surgical jaundice are carcinoma of head of pancreas, peri-ampullary carcinoma, cholangiocarcinoma, klastkin tumour, carcinoma of gallbladder, hepatocellular carcinoma and metastatic carcinomas.[7] 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.[8] The biochemical investigations include liver function tests showing high serum bilirubin and alkaline phosphatase levels. Transcutaneous ultrasound (US) is cost-effective and readily available with sensitivity of 97% in detecting site and size of the lesion, and, as such, it is considered the first-choice radiological investigation.[9] Further, computerised tomography (CT) scanning, magnetic resonance imaging (MRI), endoscopic endo-luminal ultrasound, endoscopic retrograde cholangiopancreatography (ERCP), magnetic resonance cholangiopancreatography (MRCP), percutaneous trans-hepatic cholangiography (PTC) followed by brush biopsy and cytology almost confirm the diagnosis.[10]

Surgical jaundice is not a conclusive diagnosis and a timely investigation to explicate the exact aetiology is of utmost importance because pathological changes, like secondary biliary cirrhosis, may occur if the obstruction is

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not relieved.[10] Surgical jaundice management has been posing diagnostic and therapeutic challenges to general surgeons, especially in countries with limited resources. The challenges are late presentation of the disease and dearth of modern diagnostic and therapeutic facilities.[11] The mortality and morbidity of biliary obstruction depend on the cause of obstruction, and detailed analysis of the factors that affect morbidity and mortality in patients with surgical jaundice in society is essential.[12] Common malignant causes of obstruction are carcinoma of gallbladder infiltrating into the biliary system (52%), cancer of pancreas (31%), cholangiocarcinoma (10%) and haepatoma (7%).[13]

The current study was planned to determine the frequency of malignancy and its types in patients presenting with surgical jaundice in a tertiary care setting.

Patients and Methods

The descriptive, prospective, cross-sectional study was conducted at the North Surgical Ward, Mayo Hospital, Lahore, Pakistan, from May 8 to November 8, 2020 after proper ethical approval from the university ethical committee. The sample size was estimated using WHO Sample Size Calculator with 95% confidence level, 10% absolute precision and expected percentage of malignant condition as 43.3%.[14,15] The sample was raised using non-probability consecutive sampling technique. Those included were patients of either gender aged 18-80 years presenting in out-patient department (OPD) and the Surgical Emergency with surgical jaundice. All patients with unconjugated hyperbilirubinemia confirmed on bilirubin segregation were excluded. Written informed consent was obtained from all the subjects.

The diagnosis of surgical jaundice was made on the basis of history, clinical examination, haematological and biochemical reports and radiological investigations. The patients were further investigated with the help of baseline laboratory works, tumour markers, US abdomen and CT scan. All patients were managed as per the guidelines[16] for surgical jaundice with injection vitamin K intramuscular, hydration with intravenous (IV) fluids, avoidance of constipation by lactulose or neomycin, vitals and urine output monitoring and prophylactic antibiotics. Demographic data and frequency of malignancy in patients presenting with surgical jaundice was collected using a predesigned proforma.

Data was analysed using SPSS 21. Quantitative variables were expressed as mean ± standard deviation (SD), while qualitative variables were described as frequencies and percentages. Data was stratified for age, gender, duration of disease and body mass index (BMI). Post-stratification, Fisher's exact test and chi-square test were used. $P \leq 0.05$ was considered statistically significant.

Results

Of the 95 patients, 51(53.7%) were male and 44(46.3%) were female. The overall mean age was 49.96±16.54 years (range: 18-80 years). There were 36(37.9%) cases aged <45 years and 59(62.1%) were aged 45-80 years. A total of 19(20%) cases had BMI <30 and 76(80%) cases had BMI ≥30. There were 37(38.9%) cases having duration of disease <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 with malignancy.

Among those diagnosed with malignancy, 14(28%) cases were related to gallbladder, 4(8%) head of pancreas, 9(18%) peri-ampullary carcinoma, 7(14%) cholangiocarcinoma, 6(12%) Klastkin tumour, 5(10%) hepatocellular carcinoma, and 5(10%) metastatic tumour (Figure).

The frequency of malignancy was non-significant for age, gender, BMI and disease duration (Table-1).

The type of malignancy was also non-significant for age

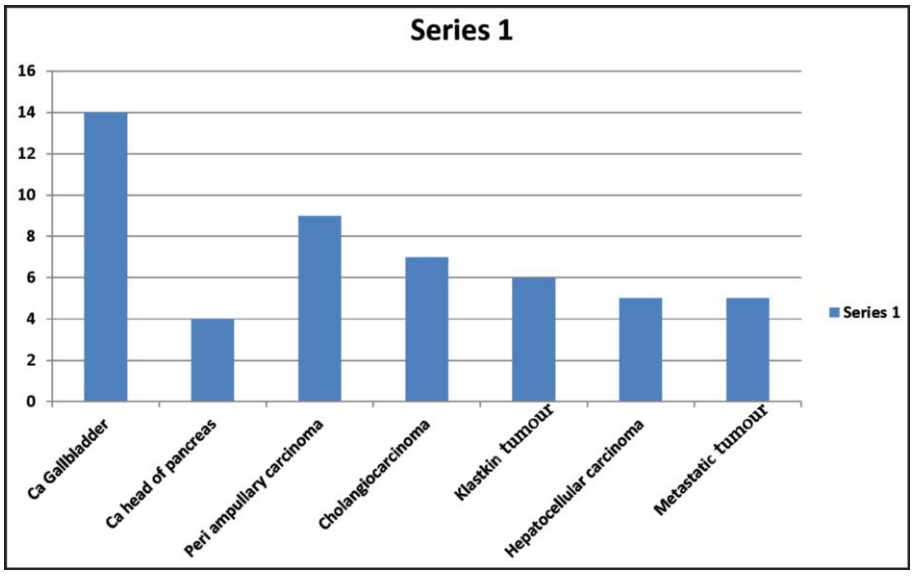

Figure: Types of malignancy.

Table-1: Comparison of frequency of Malignancy with respect to age groups (years), Gender, BMI and Duration of disease (in weeks).

Sr	Malignancy	Age			Gender			BMI			Duration		
		<45	45-80	Total	Male	Female	Total	<30	≥ 30	Total	<6	≥ 6	Total
1	Yes	16	34	50	26	24	50	8	42	50	20	30	50
2	No	20	25	45	25	20	45	11	34	45	17	28	45
3	Total	36	59	95	51	44	95	19	76	95	37	58	95

Table-2: 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%)

(Table-2).

Discussion

Biliary tract diseases impact a large proportion of the global community, with gallstones accounting for the vast majority of cases. Cholelithiais affects 20% of people aged 65 in the United States, and 1 million new instances of gallstones are identified annually.[17] Any of the ducts that transports bile from the liver to the gallbladder or from the gallbladder to the duodenum might be affected by obstruction. This can happen at many stages of the biliary tree. The primary indications and manifestations of biliary blockage are caused by bile failing to reach its exact location.[18]

The clinical context of cholestasis or lack of biliary circulation may be due to structural biliary blockage or biochemical variables in the hepatocytes. The focus of the current study was on the physical causes of biliary tree blockage, which are further classified as intrahepatic and extrahepatic. The most prevalent reason of obstructive jaundice is gallstone disease. Gall bladder stones can travel via the common bile duct (CBD) and produce colicky pain and dyspepsia.[19] Bigger gall bladder stones can be trapped in the CBD and completely block the biliary tract, causing greater intraductal pressure all through the biliary tree. Mirizzi syndrome is caused by a stone that has been lodged in the cystic duct or gallbladder neck, producing swelling and external constriction of the common hepatic duct, resulting in biliary blockage. Most (95%) biliary constraints are caused by surgical damage, with the remaining 5% caused by external abdominal injury, pancreatitis, or duct erosion caused by a gallstone. The most prevalent cause of biliary strictures in people who have not had surgery is stone pathology.[20]

Bile spillage is caused by a rupture in the duct, which causes a regional infection. As a result, scar development and the subsequent production of a fibrous stenosis are accelerated. In the United States, main pancreaticobiliary tract malignancies and other local tumours that might induce biliary tract constriction (e.g., liver, gallbladder) contribute around 80,000 new cases of cancer and an anticipated 58,000 fatalities.[21]

Despite significant advances in detection and therapy, the 5-year survival rate for the most prevalent cancers, pancreatic cancer and cholangiocarcinoma, remains low at 5% (20). Gallbladder, duodenum and ampullary malignancies, as well as disseminated tumours and malignant lymph node involvement can all cause cancerous biliary system blockage.[22]

A study reported that females outnumbered males 2:1. Calculus (85%) was the most common cause, followed by malignant cause (10%). Maximum incidence was observed between 30-50 years age.[23] In the current study, the mean age was 49.96±16.54 years (range: 18-80 years). There were 51(53.7%) male and 44(46.3%) female cases.

Compared to the types of malignancy noted in the current study, one study reported that common malignant causes of obstruction were carcinoma of gallbladder infiltrating into biliary system (52%), pancreatic cancer (31%), cholangiocarcinoma (10%) and hepatoma (7%).[24] The carcinoma of gallbladder was high in the current study.

A recent study examined gender and age distribution, as well as the prevalence of malignant or non-malignant aetiologies in cases having obstructive jaundice. It was much more common in the fifth and sixth decades of age, with a male-to-female ratio of 2:3. Malignancy (68%) was more prevalent than non-significant illness (32%), and periampullary cancer and progressed gallbladder carcinoma happened with identical rate of 32 instances among the tumours. Also, 46% of malignant type of

aetiology was reported with stage IV illness. Therapeutic excision of periampullary tumours with classic pancreaticoduodenectomy was encountered in 14% cases.[25]

Another study analysed the aetiological spectrum, and treatment outcome of obstructive jaundice. Choledocholithiasis was responsible for approximately 22% of the gross causation of obstructive jaundice (73.3%). Periampullary tumours were the most frequent reason of malignancy (34%).[26]

Another study reported 84% cancer diagnosis. Carcinoma of gall bladder was found in 44(52%), pancreatic cancer 26(31%), cholangiocarcinoma 8(10%) and hepatoma 6(7%). The rate of cancer in causing obstructive jaundice was 84%, and it rose exponentially. Carcinoma gall bladder was the most frequent carcinoma that caused obstructive jaundice, especially in females, while cancer of the head of pancreas was the commonest tumour responsible in male patients.[27]

Conclusion

More than half of the surgical jaundice patients had malignancy. The most common type of malignancy was that of gallbladder.

Limitations: Small sample size and not a multi institutional study.

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Conflict of Interest: None.

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