



Research Paper

Clinicopathological features and management of obstructive jaundice at Queen Elizabeth Central Hospital, Malawi. A retrospective cohort analysis

L. Kaomba, MBBS, MSc, FCS, ChM, General Surgeon and Clinical Lecturer^{a,b,*}, J. Ng'ombe, BSc, MSc, Research Officer^b, W. Mulwafu, MBBS, FCORL, PhD, Executive Dean of School of Medicine and Oral Health (SMOH)^{a,b}

^a College of Surgeons of East Central and Southern Africa (COSECSA)

^b Kamuzu University of Health Sciences, P/Bag 360, Chichiri, Blantyre 3, Malawi



ARTICLE INFO

Keywords:

Obstructive jaundice
Pancreatic cancer
Cholelithiasis
Jaundice
Bile
Pancreas
Liver

ABSTRACT

Introduction: The diagnosis of obstructive jaundice (OJ) is a challenge and is often made late especially in low-resource settings. There is a paucity of data on the aetiology and prognosis of patients with obstructive jaundice in Malawi and Sub-Saharan Africa. The objective of this study was to determine the aetiology, clinical presentations, and short-term treatment outcomes of patients managed for OJ in Malawi.

Methodology: A review of case notes of all patients admitted with a clinical diagnosis of OJ from 2012 to 2022 was done. We reviewed the clinical presentation, laboratory findings, management, intra and post-operative complications, and patient outcomes. Data was entered into an Excel spreadsheet and analysed using SPSS version 25.

Results: Of 26,796 patient admissions, 5339 (19.9%) were for non-trauma abdominal symptoms, of which 164 (0.6% of surgical admissions and 3% of abdominal symptoms) were for obstructive jaundice. Ages varied from 16 to 89 years. Females were 45 (58.4 %) of the population. The commonest presenting complaint was jaundice followed by abdominal pain and distention. The mean duration of symptoms at presentation was 8.5 weeks. The most frequent imaging modality was abdominal ultrasound 50(65 %). Twenty-six patients (33.8 %) were discharged with a diagnosis of obstructive jaundice of undetermined pathogenesis. The commonest diagnosis was pancreatic cancer 20(26.0 %) followed by Cholelithiasis 11(14.3 %). Patients younger than 50 years had the same likelihood of presenting with cancer as those older than 50 years.

Conclusion: It is important to have a high index of suspicion in all adult patients presenting with obstructive jaundice as patients younger than 50 years have a similar risk of malignancy as older patients.

Introduction

Obstructive jaundice is a common surgical problem that occurs when there is an obstruction to the passage of conjugated bilirubin from the liver cells to the intestine. It may be caused by a heterogeneous group of diseases that include both benign and malignant conditions and common aetiologies have been reported to vary from centre to centre [1,2]. The management of obstructive jaundice is a challenge to general surgeons working in resource limited settings due to the late presentation of the disease, limited modern diagnostic and therapeutic facilities, and increased risk of morbidity and mortality associated with performing surgical procedures on jaundiced patients as compared to operating

patients who are not jaundiced [2]. A better understanding of the clinical profile of obstructive jaundice is required for early diagnosis, curative surgery, and increased survival [2,3]. Malignant conditions are the most common aetiological cause [1,2,4] and palliative procedures are performed more frequently in this patient group due to late presentation [3]. Some studies have demonstrated a male predominance [5,6] while others have demonstrated a female predominance [2–4,7,8] in the gender distribution of this condition. We do not know if this is the same for our region and country. There is a lack of information that details our experiences with managing these patients and there are no treatment protocols that have been detailed on how to manage these patients in our centre with the current resources. There have been some

* Corresponding author.

E-mail addresses: lkaomba@gmail.com, lkaomba@kuhes.ac.mw (L. Kaomba), wmulwafu@kuhes.ac.mw (W. Mulwafu).

<https://doi.org/10.1016/j.sopen.2024.05.004>

Received 31 August 2023; Received in revised form 24 November 2023; Accepted 16 May 2024

Available online 22 May 2024

2589-8450/© 2024 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC license (<http://creativecommons.org/licenses/by-nc/4.0/>).

studies that have suggested that H Pylori and HIV [9] may have a role in the aetiology of obstructive jaundice and these factors also remain largely unexplored in Malawi and the region despite having a higher burden of both diseases as compared to the Western Nations. Pancreatic cancer has been identified as the most common malignant cause and is a disease that has been described as having a fatal nature. Although Malawi has been shown to have one of the lowest mortalities due to pancreatic cancer (0.3/100,000) [10], the nature of the presentation of the disease and its management is undocumented.

Obstructive jaundice is a challenge, both in terms of diagnosis and management, and despite advances in the technology that aids the diagnosis of the underlying pathology, surgical management is associated with high mortality and morbidity [2,3]. As a result of this high morbidity and mortality early diagnosis is of paramount importance so that patients may have the chance of getting definitive treatment rather than palliative surgical procedures [3]. This high mortality and morbidity associated with biliary obstruction is dependent upon the causes of the obstruction [2] and this study aims to determine the cause of obstructive jaundice in our patient group, the investigations that are used to diagnose and aid the management of these patients, and treatment outcomes of patients who have presented with obstructive jaundice within the last eleven years to guide the diagnosis and management of patients presenting similarly in the future. We also aim to identify the factors associated with increased morbidity and mortality for the same purpose.

Rationale

Until now, no study has been done to document the prevalence, presentation, management, and outcomes of obstructive jaundice in Malawi.

Hypothesis

Patients older than 50 presenting with obstructive jaundice have the same likelihood of having malignant disease as those younger than 50 years.

Methodology

This study is a retrospective cohort study, in the surgical department at Queen Elizabeth Central Hospital (QECH) in Blantyre, Malawi. Malawi is a country in South-Eastern Africa with a total population of 17,563,629 and QECH is the largest hospital in Malawi with 1200 beds. It is a referral centre for mostly the southern region of Malawi which has a population of 7 million people. It has a surgical unit which includes general, pediatric, ear nose and throat, plastic, orthopedic, ophthalmologic, and neurosurgery. There are 23 surgeons from the mentioned specialties of whom 6 are general surgeons, and the adult surgical units perform about 601 surgeries a month. The study included a retrospective cohort of all surgical patients with a clinical diagnosis of obstructive jaundice aged 16 years and above who were admitted to the hospital during the period from January 2012 to December 2021. Data was collected using a structured data collection sheet. Collected data included patients' demographics, clinical symptoms, diagnostic techniques, therapeutic intervention, and short-term outcomes in one month.

Study tools were records of the patients such as clinical case sheets retrieved from the HMIS. Clinical data was reviewed. Details were captured from the captured- history, clinical examination, and laboratory investigations which included liver function tests for total bilirubin, conjugated bilirubin, alkaline phosphatase, hepatic trans aminases SGOT and SGPT, total serum proteins and serum albumin, and other laboratory investigations including haemoglobin estimation, total leucocyte count, differential leucocyte count, platelet count, prothrombin time, International normalized ratio (INR), blood urea, serum

creatinine, serum electrolytes.

Imaging modalities used to investigate the cause of the obstructive jaundice were also recorded and the findings from the imaging were captured.

During the study period, a total of 164 patients were clinically diagnosed with obstructive jaundice. 88 files were identified from HMIS and data from 2 files was discarded from the analysis because it was found to be incomplete while data cleaning and 9 files were excluded as they belonged to patients who were below the age of 18 at the time of admission and treatment. Thus, finally, data from 77 patients were analysed.

All the proforma were manually checked and edited for completeness and consistency and were then coded for computer entry. After the compilation of collected data, analysis was done using Statistical Package for Social Sciences (SPSS), version 20 (IBM). Grammarly was used for spelling and grammar checks.

Data management and analysis

Descriptive statistics were presented as numbers and percentages for categorical data. Mean and standard deviation were presented for continuous data. The chi-square test was used for the association between categorical variables. The primary outcome was in-hospital mortality and the secondary outcome was morbidity associated with obstructive jaundice. Independent variables were age, malignancy, leucocytosis, and haemoglobin ≤ 10 mg/dl; creatinine > 1.3 mg/dl; albumin ≤ 3 g/dl; bilirubin < 20 mg/dl; and serum alkaline phosphatase > 100 IU/l. Logistic regression was conducted to determine factors affecting the outcome, and Odds ratios were calculated. A separate multivariate logistic regression was conducted to determine the risk factors for obstructive jaundice. A *P*-value equal to or < 0.05 will be considered statistically significant.

Ethical considerations

Approval was sought from the Management of the Queen Elizabeth Central Hospital (QECH) and the hospital research committee. The Head of the Department of Surgery approved the study. Data was de-identified and entered using unique identifiers to ensure privacy and was stored in a password-protected document accessible only to the researcher and the research assistant. Informed consent was not required.

Inclusion and exclusion criteria

All adult patients admitted to the surgical wards at QECH from January 2012 to December 2022. All pediatric patients, all patients who were admitted to other wards at Queen Elizabeth Central Hospital with similar diagnoses, and all patients admitted to the adult surgical wards with jaundice without evidence of biliary tree obstruction will be excluded.

Results

There were 26,796 admissions to the general surgical wards between January 2012 and December 2022. Out of these admissions, 5339 (20 %) were non-trauma related abdominal pathology. 164 (3 %) had a clinical diagnosis of obstructive jaundice representing 0.6 % of all surgical admissions or 6 patients per 1000 surgical patients and 3 % of all patients presenting with non-traumatic abdominal pain. Ninety-five files were identified from the HMIS and 14 were excluded as they belonged to individuals that were < 16 years and 4 files were found to be incomplete and were not included in the analysis. A total of 77 files were analysed.

Out of 77 patients, 45 (58.4 %) were females and 32 (41.6 %) were males. The age range was 16–89 years with a mean of 49.23 years (SD ± 17.57). The mean hospital stay was 11.4 days. Thirty-three patients (42.8 %) were from within Blantyre city while 44 (57.1 %) were referred

from the surrounding districts.

Jaundice was the most frequent presenting complaint followed by abdominal pain and distention; the mean duration of symptoms at admission was 8.5 weeks. Nine patients (11.6 %) were documented to have had a history of taking alcohol and 1 (1.3 %) was indicated as having a history of smoking, 32 (41.6 %) had no history of intoxications and it was not indicated in 34 (44.2 %) whether there was a history of any intoxications or not. The commonest comorbidity was HIV 15 (19.4 %) followed by hypertension 6 (13.6) and 1 was on anti-retroviral for a documented hepatitis B infection. Thirty-eight (49.4 %) had a serology result in their file and of those, 2 (2.6 %) had tested positive for Hepatitis B. The commonest findings on physical examination were jaundice and hepatomegaly 34 (44 %), followed by Jaundice and right upper quadrant tenderness 21 (27 %), followed by isolated jaundice 14 (18.2 %).

Ultrasound was the most frequently 50 (65 %) used imaging modality followed by CT scan 5 (6.5 %) and MRI 3 (3.9 %). Twenty-six patients were discharged to be followed up in the clinic before the cause of their jaundice was confirmed. There was a malignant cause of jaundice in 35 (46.8%) patients. Of these, 20 (26.0 %) were diagnosed to have pancreatic cancer, 6 (7.8 %) were clinically diagnosed to have a cholangiocarcinoma, 3 (3.9%) had an intrahepatic tumor, 3 (1.3%) had an invasive gallbladder carcinoma and one had extrinsic compression from a mid-transverse colonic tumor. Choledocholithiasis led the benign causes with 11 (14.3 %) patients. (Table 1).

Four (5.2 %) patients had clotting results and 1 (1.3 %) had an International Normalized Ratio (INR), prothrombin time (PT), and activated thromboplastin time (APTT) result, the other 3 (3.9 %) had an INR and PT. The INR results ranged from 0.9 to 3, PT ranged from 12.5 to 34.5 s and APTT was 4.7 s. Three patients of the four received surgical intervention for their condition.

Twenty patients (26 %) underwent surgery and 57 (74 %) were managed non-operatively. The mean number of days from admission to surgery was 9.68. ASA scores ranged from 1 to 3. One patient (5.0 %) diagnosed to have ampullary cancer had a Whipple procedure, another (5.0 %) had a cholecystectomy, choledochotomy, and t-tube closure for choledocholithiasis, 1 (5.0%) with extrinsic compression had a transverse colonic tumour resection and the rest 17 (85 %) were treated with palliative bypass procedures. Two patients (10 %) developed complications; 1 (5.2 %) bled at the incision on the first postoperative day and another was noted to be rapidly accumulating ascites after a palliative procedure. One was operated 3 months later for an inguinal hernia. Two (10%) patients had a histologically confirmed diagnosis, and both were adenocarcinomas of the ampulla and the pancreatic head.

Of the 50 (65 %) patients that were evaluated with ultrasound, 19 (38 %) had dilatation of the common bile duct, 16 (32 %) had dilatation of intrahepatic ducts and 16 (32 %) had distention of gallbladder, 14 (28 %) had abdominal masses and 4 (8 %) had ascites. Most of these findings were noted in patients who had a malignant underlying cause for their obstructive jaundice. There was no difference in the way ultrasound picked features of benign and malignant disease (Table 2). There were 6 (12 %) ultrasound reports that were not available in the notes and though some of the findings were described in the file in some instances, the descriptions were mostly incomplete and could not be used in the analysis.

The study population was made up of about 40 (51.9 %) of those who were in the age group between 49 and 16 years and 37 (48 %) of those aged 50 to 89 years. The aetiology of obstructive jaundice was similar in both groups with malignant causes leading in both groups and patients <50 years of age had a similar risk of presenting with a malignant or benign cause of their jaundice as those in the age group that was older than 50 (Table 3).

Fourteen patients (18.2 %) died during their hospital stay and 1 (5.2 %) died after surgical management on postoperative day number 8. Females were the majority and constituted 10 (71.4 %) of this population and males were 4 (28.6 %). The patients who died had been in the hospital for an average of 9.4 days, their ages ranged from 16 to 80 with

Table 1
Patient demographics.

		No of patients	%
Sex	Male	32	41.6
	Female	45	58.4
Presenting Complaints	Jaundice	61	*79
	Abdominal pain and distension	39	*51
	Dark urine and Discolored stool	18	*23
	Pruritus	24	*31
	Vomiting	14	*18
Presenting Clinical Signs	Jaundice and hepatomegaly	34	*44
	Jaundice and right upper quadrant tenderness	21	*27
	Jaundice and right upper quadrant mass	6	*7.8
	Isolated jaundice	14	*18.2
	Abdominal distention and jaundice	4	*5.2
Imaging Modality	USS	50	65
	CT	5	6.5
	MRI	3	3.9
	USS + EDG	3	3.9
	USS + CT	5	6.5
	USS + MRI	2	2.6
	None	9	11.6
Clinical Diagnosis	Obstructive Jaundice (Undetermined cause)	26	33.8
	Pancreatic Cancer	20	26.0
	Cholangiocarcinoma	6	7.8
	Choledocholithiasis	11	14.3
	Intrahepatic Tumor	3	3.9
	Ampullary Tumor	2	2.6
	Sclerosing Cholangitis	1	1.3
	Cholecystitis	1	1.3
	Gallbladder polyp	1	1.3
	Invasive Adenocarcinoma of gallbladder	3	3.91.3
	Extrinsic compression	1	1.3
	Choledochal cyst	1	1.3
	Comorbidity	Hypertension	6
Diabetes		1	1.3
HIV		15	19.5
Hepatitis		1	1.3
Hernia		1	1.3
Right-sided Hemiplegia		1	1.3
None		52	67.6
Hepatitis B Status	Positive	2	2.6
	Negative	36	46.8
	Unknown	39	50.6
Intoxication History	Alcohol	9	11.6
	Smoking	1	1.3
	Herbal medication	1	1.3
	Nil	32	41.6
	Unknown	34	44.2

* One patient would have multiple complaints and clinical findings.

a mean of 48.9 years and the commonest comorbidity was HIV 6 (42.9 %) followed by hepatitis 1 (7.1 %) and hypertension 1 (7.1 %). The commonest diagnosis of those who died was malignancy 5 (35.7 %). Most of the patients died before a definitive diagnosis was established 7 (50 %) (Table 5). Five (35.7 %) had had at least one transfusion during their hospital stay and 2 patients were post-surgery. The positive predictors of mortality were haemoglobin <10 g/dl, leucocytosis >15,000/ μ L, and creatinine >1.3 mg/dl. There was no association between malignancy, albumin <3 g/dl, bilirubin >20 mg/dl, serum alkaline

Table 2
Ultrasonographic findings in cases of obstructive jaundice.

Ultrasound Findings		Malignant	Benign	Odds Ratio	CI
CBD Dilated	Yes	30 (68.2)	14 (31.8)	2.5	0.64–9.76
	No	15 (50 %)	4 (28.6)		
Dilated intrahepatic ducts	Yes	11 (36.7 %)	5 (35.7 %)	2.2	0.54–8.97
	No	19	9		
Dilated gallbladder	Yes	11 (36.7 %)	5 (35.7 %)	2.2	0.54–8.97
	No	19	9		
CBD stone*	Yes	0	0		
	No	30	14		
Abdominal Mass*	Yes	14 (46.7 %)	0		
	No				
Ascites*	Yes	4 (13 %)	0		
	No				
GB stones *	Yes	1 (3.3 %)	6 (42.9)		
	No				
Dilated pancreatic duct*	Yes	6 (20 %)	0		
	No				

* These variables had zero cases in some categories so OR could not be calculated.

Table 3
Cause of jaundice by age group.

Age	>50	<50	OR (95 % CI)
Malignant	18	17	0.859 (0.350–2.107)
Undetermined	10	16	1.948 (0.743–5.105)
Benign	9	7	0.705 (0.233–2.135)

phosphatase >100 IU/L, HIV status, and mortality. None of the patients who died were documented to have had a fever (Table 4). There was no association between age, gender, hepatitis B status, intoxications, and having a malignant cause of obstructive jaundice.

The Fisher’s Exact Test was conducted to assess the association between HIV status and mortality. The *p*-value obtained was 0.154, suggesting that, based on our data; there is no strong statistical evidence of a significant association between HIV status and mortality.

Discussion

A total of 164 patients had a clinical diagnosis of obstructive jaundice representing 6 patients per 1000 surgical patients. Obstructive jaundice appears to be rare in this setting compared to places like Saudi Arabia where Alrashed et al. [8] showed that OJ occurred in 242 per 1000 surgical cases. The commonest cause of jaundice was malignancy in seven out of ten patients with an established clinical diagnosis at the time of discharge.

The patient population in this study had a female gender majority and patients present to this centre after having had their symptoms for at least 2 months. This study’s findings are in line with findings from other studies that found that females more frequently presented with obstructive jaundice than males and that cancer of the pancreas was the

Table 4
Positive predictors of mortality.

Risk Factor	Odds Ratio	95 % Confidence Interval	
		Lower Limit	Upper Limit
Haemoglobin ≤10 g/dL	0,200	0,047	0,857
White cell count ≥15,000/μL	6333	1180	33,979
Creatine ≥1.3 mg/dL	15,000	1583	142,171

Table 5
Diagnoses and mortality.

	Diagnosis	Frequency
1	Cholangiocarcinoma	2 (14.3 %)
2	Choledocholithiasis	2 (14.3 %)
3	Undetermined	7 (50 %)
4	Head of Pancreas	2 (14.3 %)
5	Hepatocellular carcinoma	1 (7.1 %)

leading malignant cause and choledocholithiasis the leading benign cause [1,2,7,17].

Most patients are not being screened for intoxications at admission 34(44.2 %). However, of the 43 (55.8 %) that were screened almost 3 in every 4 patients 32(74.4 %) denied exposure to alcohol or smoking. Most patients had no comorbidities 52 (67.6%) and the commonest comorbidity was HIV in 15 (19.4 %) followed by hypertension 6 (7.8%). Thirty-eight (49.3%) patients were tested for hepatitis B Sag and 36 (94.7%) of them were negative so Hepatitis B was not a common finding in patients presenting with OJ in this study.

The mean hospital stay was 11.4 days, and this agrees with the fact that the majority of patients were treated non-operatively and that a significant proportion was discharged without a definitive clinical diagnosis to be followed up in the clinic.

Most patients in this study had ultrasonographic assessment, a few had a CT scan and an MRI done. The higher prevalence of ultrasonographic assessment might be because of the wide availability of USS [21,22] and the low cost of the examination. Of note is that our centre did not have a CT scanner until 2020 and so in the years before that ultrasound was the most easily accessible modality of radiological investigation. Studies have shown that there is a proportion of patients whose aetiology of obstructive jaundice would remain undetermined at the time of discharge and could have possibly remained undetermined after these common cross-sectional imaging techniques such as ultrasonography or spiral-CT or MRCP as these non-invasive techniques can still yield uncertain results in some particular benign or malignant pathological conditions such as when gallstones are too small, or when bile duct dilatation is limited [8,22].

The majority of the patients were referred from the surrounding districts and they were presenting about 8.5 weeks since the onset of their symptoms. It is worth exploring further to demonstrate how long these patients had been presenting to district hospitals before referral to a tertiary centre. This issue of late presentation in Africa has been studied, mostly in breast cancer and cervical cancer and it was found that patients present late due to high costs of diagnostic and treatment services; lack of coordination between primary, secondary, and tertiary healthcare sectors; inadequate staffing; and continued reliance on traditional healers and complementary medicines [11,12]. These factors could also be explored in the future for this setting.

More than half of the patients 40 (52 %) were aged 50 and above and patients older than 50 years were found to have the same likelihood of presenting with obstructive jaundice of a malignant aetiology as those younger than 50. This cut-off age was decided based on the life expectancy in Malawi which is 63.72 years and based on data from developed countries that have shown that early-onset biliary tract cancer, a rare malignancy originating from the bile ducts (cholangiocarcinoma) or gallbladder, is increasing [13,14]. The mean age in this study was 49.23 years which is younger than the mean and median ages that were described in Ghana[15], Tanzania [16] and Uganda [17].

Pancreatic cancer was the most common malignancy causing obstructive jaundice in this study and its underlying cause is not well understood to date the attendant survival rate is very poor and stands at 9 % at 5 years [18]. Risk factors such as obesity, diabetes, alcohol abuse, H. Pylori infection, non-O-blood group, and chronic pancreatitis have been identified in other studies [16]. In this study, the issue of H-pylori infection and cancer of the pancreas has not been explored.

Close to 40 % of the patients were discharged to follow up on their results as outpatients and possibly received their definitive diagnosis as out-patients and it remains unclear whether the patients we were discharged to be followed up in the clinic did return or not and what are factors determining whether they return or not. An alternative explanation could be that patients were readmitted and operated on – especially those with a benign underlying aetiology and whose files were never merged into one or that they did not survive long enough to meet their next appointment. The data that attempts to expound on the reasons why some oncologic patients maintain follow-up care while others do not is scarce, especially on the topic of obstructive jaundice. However, regarding surgical oncology patients, patient characteristics such as older age at the time of diagnosis, longer driving distance to clinic, absence of adjuvant radiation or chemotherapy, and lack of recurrence have been associated with a greater risk of being lost to follow-up after surgical treatment [19].

Only 2 patients had histological confirmation of the underlying malignant process and this could be explained in part by the low operation rates that we have in this patient group as compared to other studies. It could also be partly explained by the lack of interventional radiology services at our centre. However, of note, even patients who had surgical procedures to bypass or treat the cause of the obstruction did not have a biopsy of the described lesion taken and this begs the question of whether there is an aversion to taking a biopsy of biliary masses during open surgical procedures and this could be explored by qualitative methodology.

Mortality of the patients in this study was 14 (18.2 %) as compared to a mortality of about 20.3 % and 4.7 % that has been observed in Tanzania [16] and Europe [23] respectively. The higher mortality in Tanzania could have been because 94 % of their patients had surgical management as compared to this study where three out of four patients were treated conservatively. The low operative rate in comparison may be due to the patients in this study presenting at such an advanced stage and probably being deemed unfit for anaesthesia and referred for conservative palliative intervention.

In the Tanzanian study, Age >60 years, prolonged duration of jaundice, malignant causes, high bilirubin, and HIV infection with low CD4 count were identified as positive predictors of Mortality. In this study, we identified low haemoglobin, leucocytosis, and high creatinine to be positive predictors of mortality. In this study, there was no association in mortality between mortality and age >60 yrs., high bilirubin, high alkaline phosphatase, and malignancy but this could also be explained by the size of the sample and the proportion in the sample that had laboratory results still attached to their files. Data on patient CD4 count levels were unavailable in the files and this is something that can be explored in the future. In comparison to Tanzania, a study done in Greece described 8 risk factors for mortality and they were age >70 yrs., malignancy, leucocytosis, fever, low haematocrit, high creatinine, high bilirubin and alkaline phosphatase and low albumin [24].

While the Fisher's Exact Test did not reveal a statistically significant association between HIV status and mortality in obstructive jaundice patients ($p = 0.154$), it is important to interpret these findings in the broader clinical context. The clinical significance of the observed association, although not statistically robust, should be carefully considered. Given the uncommon nature of the outcome and the imbalanced distribution, the lack of statistical significance may not negate the possibility of a clinically meaningful association. Although not statistically significant, if there is a notable difference in mortality rates between HIV-positive and HIV-negative patients, as seen in this study, clinicians should remain vigilant about the potential impact of HIV status on short-term treatment outcomes in obstructive jaundice cases.

Limitations

As this was a retrospective study, all the limitations associated with this study design must be considered. Sample size limitations; We

analysed 77 files that fit this study's criteria and therefore fell short of the calculated sample size by 11.5 % so these findings must be interpreted with that in view. This constraint might have been overcome by including patients who may have been admitted to the medical and oncological units under the same diagnosis. The challenge however is that this would have made the process of retrieving files more complex and prolonged. Referral bias: QECH is a referral hospital so this may have affected our hospital prevalence of OJ. This could have been overcome by performing a multicentre study. Selection bias: Although the overall mortality is comparable to the mortality found in other studies, the mortality of those who had surgery was lower than those who did not, and this might be attributed to the low operation rate in this group of patients as compared to the other previously cited studies. The patients living with HIV in this study did not have documented CD4 count levels this factor could not be analysed to determine whether it is a predictor of mortality.

Recommendations

Further work needs to be done on this topic, to further describe the histological spectrum of the malignant diseases causing obstructive jaundice, to describe or dispute the role of intoxications and infections like HIV and *H. pylori* in the malignant aetiology, to describe the location and stage of pancreatic cancers and to identify the kind of stones that are causing biliary obstruction. Work also needs to be done to quantify the survival and quality of life of the patients who are discharged after surgical and non-surgical management.

There is a need to develop a detailed departmental cancer database. This database would provide a very detailed summary of the patient's hospital stay This would ensure that we have complete data on all the patients with a cancer diagnosis even in the absence of physical files.

Conclusion

Obstructive jaundice is common among females in our population and patients often present with jaundice and abdominal pain. Most patients are discharged before they get a histological diagnosis. Malignant causes are more prevalent with pancreatic cancer in the lead while choledocholithiasis is the most common benign cause. Most patients with malignancies are treated with palliative biliary bypass procedures. All adult patients presenting with OJ must be approached with a high index of suspicion for malignancy as they have a similar risk of presenting with malignancy.

Funding

We received no external sources of funding.

Ethical clearance

We received ethical clearance from the hospital research committee. Patient consent was not required.

CRediT authorship contribution statement

Dr Lucy Kaomba came up with the research concept, collected the data, performed part of the analysis, and drafted the original manuscript. James Ng'ombe performed the data analysis and interpretation of results. Dr Wakisa Mulwafu contributed to the design of the work, and data analysis. Professor Thomas Walsh reviewed the results and contributed to interpretation of results. All authors approved the final manuscript.

Declaration of Generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the authors used Grammarly (free version) to check grammar and spelling automatically. After using this tool/service, the authors reviewed and edited the content as needed and took full responsibility for the content of the publication.

Declaration of competing interest

We have no conflicts of interest to declare.

Acknowledgements

I would like to acknowledge my supervisor Dr. Wakisa Mulwafu for the insight and guidance throughout the research period, ACEPHEM for hiring a research assistant, Dr. Towera Mwanamanga for aiding the data collection process, and Mr. L Kazembe for formatting the document.

References

- [1] Gupta AK, Singh A, Goel S, Tank R. Profile and pattern of obstructive jaundice cases from a tertiary care teaching hospital of Uttar Pradesh. *Int Surg J* 2017 Jan 25;4(2):743–6.
- [2] Chalya PL, Kanumba ES, Mchembe M. Etiological spectrum and treatment outcome of obstructive jaundice at a university teaching hospital in northwestern Tanzania: a diagnostic and therapeutic challenges. *BMC Res Notes* 2011 Dec;4(1):1–7.
- [3] Olatoke S, Agodirin S, Adenuga A, Adeyeye A, Rahman G. Management of obstructive jaundice: experience in a North Central Nigerian Hospital. *Trop J Health Sci* 2018;25(3):21–5.
- [4] Shukla S, Kharat PR, Kumar K. Clinicopathological study on patients presenting with obstructive jaundice. *Int Surg J* 2018 Jan 25;5(2):705–10.
- [5] Padhy B, Murmu D, Samal D, Jha S. Clinical study of surgical jaundice: an institutional experience. *Int Surg J* 2018;5(1):138–42.
- [6] Khan ZA. Clinical profile of patients with obstructive jaundice: a surgeon's perspectives. *Int Surg J* 2019 May 28;6(6):1876–80.
- [7] Siddique K, Ali Q, Mirza S, Jamil A, Ehsan A, Latif S, et al. Evaluation of the aetiological spectrum of obstructive jaundice. *J Ayub Med Coll Abbottabad* 2008 Dec 1;20(4):62.
- [8] Alrashed FM, Alzahrani FM, Alflan MA, Almalki AY, Al-Shaleel AS, Aldugman GA, et al. Obstructive jaundice: incidence, etiology and management in aseer region, Saudi Arabia. *Indo Am J Pharm Sci* 2018 Dec 1;5(12):17102–9.
- [9] Smith SL, Ajayi A, Jolaiya T, Onyekwere C, Setshedi M, Schulz C, et al. Helicobacter pylori infection in Africa: update of the current situation and challenges. *Dig Dis* 2022 Jul 1;40(4):535–44.
- [10] Rawla P, Sunkara T, Gaduputi V. Epidemiología del cáncer de páncreas: tendencias globales, etiología y factores de riesgo. *Epidemiology of pancreatic cancer: global trends, etiology and risk factors. World. J Oncol* 2019;10(1):10–27.
- [11] Espina C, McKenzie F, dos-Santos-Silva I. Delayed presentation and diagnosis of breast cancer in African women: a systematic review. *Ann Epidemiol* 2017 Oct 1;27(10):659–71.
- [12] Lombe DC, Mwamba M, Msadabwe S, Bond V, Simwinga M, Ssemata AS, et al. Delays in seeking, reaching and access to quality cancer care in sub-Saharan Africa: a systematic review. *BMJ Open* 2023 Apr 1;13(4):e067715.
- [13] Van Dyke AL, Shiels MS, Jones GS, Pfeiffer RM, Petrick JL, Beebe-Dimmer JL, et al. Biliary tract cancer incidence and trends in the United States by demographic group, 1999–2013. *Cancer* 2019 May 1;125(9):1489–98.
- [14] Rahman R, Ludvigsson JF, von Seth E, Lagergren J, Bergquist A, Radkiewicz C. Age trends in biliary tract cancer incidence by anatomical subtype: a Swedish cohort study. *Eur J Cancer* 2022 Nov 1;175:291–8.
- [15] Asare OK, Osei F, Appau AA, Sarkodie BD, Tachi K, Nkansah AA, et al. Aetiology of obstructive jaundice in Ghana: a retrospective analysis in a tertiary hospital. *J West African Coll Surg* 2020 Jul;10(3):36.
- [16] Mabula JB, Gilyoma JM, Mchembe MD, Jaka H, Kamugisha E, Kidenya B, et al. Predictors of outcome among patients with obstructive jaundice at Bugando Medical Centre in north-western Tanzania. *Tanzan J Health Res* 2013;15(4).
- [17] Odongo CN, Dreque CC, Mutibwa D, Bongomin F, Oyania F, Sikhondze MM, Acan M, Atwine R, Kirya F, Situma M. Etiology, Clinical Presentations, and Short-term Treatment Outcomes of Extrahepatic Obstructive Jaundice in South-western Uganda.
- [18] Björnsson E, Gustafsson J, Borkman J, Kilander A. Fate of patients with obstructive jaundice. *J Hosp Med.*
- [19] R, Smith JB, Cummings E, Fassas S, Kakarala K, Shnyder Y. Assessment of conditions leading to lost-to-follow-up of head and neck cancer patients. *Am J Otolaryngol* 2022 Jul 1;43(4):103443.
- [20] Saddique M, Iqbal SA. Management of Obstructive Jaundice: experience in a tertiary care surgical unit. *Pak J Surg* 2007;1(23):23–5.
- [21] Singh A, Mann HS, Thukral CL, Singh NR. Diagnostic accuracy of MRCP as compared to ultrasound/CT in patients with obstructive jaundice. *J Clin Diagn Res* 2014 Mar;8(3):103.
- [22] Greig JD, Krukowski ZH, Matheson NA. Surgical morbidity and mortality in one hundred and twenty-nine patients with obstructive jaundice. *Br J Surg* 1988 Mar; 75(3):216–9. Dimon EL, Simmons JK, Ziegler A, Bollman M, Bur A, Nallani.
- [23] Pitiakoudis M, Mimidis K, Tsaroucha AK, Papadopoulos V, Karayiannakis A, Simopoulos C. Predictive value of risk factors in patients with obstructive jaundice. *J Int Med Res* 2004 Nov;32(6):633–8.