Original Article

Aetiology and Challenges of Managing Obstructive Jaundice in a Resource-limited Setting in South Western Nigeria

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Abstract

Background: Obstructive jaundice is a common clinical condition with a varying diverse spectrum of aetiology from region to region and its management is often associated with challenges. **Aims:** To highlight the spectrum of aetiology, challenges, and limitations in the management of obstructive jaundice in a resource-limited setting. **Patients, Materials and Methods:** Prospective descriptive study over a period of seven years in two teaching hospitals in Nigeria. Patients with a diagnosis of obstructive jaundice between April 2015 and March 2022 were consecutively enrolled into the study. Relevant data were obtained through a pretested paper pro forma. **Results:** Eighty-four patients were studied. The mean age of the patients was 54.8 ± 2.1 with male to female ratio of 1.1: 1. Malignant cases were responsible for 84.5% of cases. The mean duration of the disease was 119.6 ± 13.7. All patients had an abdominal ultrasound scan done. Only 42.4% of patients could afford computed axial tomography (CAT), and other minimally invasive investigations were not available. The mean bilirubin level shows a statistically significant difference between benign and malignant cases (301 ± 9.8 vs. 398 ± 11.1; $P < 0.001$). Sixty-five (80.2%) patients were operated upon. Fifty-five (84.6) patients' surgeries were delayed. None of the patients operated upon had intraoperative cholangiography due to lack of facility and no laparoscopic procedure was done. **Conclusion:** Obstructive Jaundice is a common surgical condition in our environment. The majority of cases were malignant in origin and delayed presentation and lack of modern diagnostic and therapeutic facilities were responsible for poor outcomes.

Keywords: Challenges, limited resource setting, obstructive jaundice

Introduction

Obstructive jaundice is a common clinical condition characterised by impairment of the flow of bile into the intestine[1] and when extra-hepatic in origin is termed surgical jaundice. The condition is caused by a heterogeneous group of diseases ranging from benign to malignant conditions. Early diagnosis with prompt surgical intervention improves outcomes.[1-4] The management is often met with challenges in a limited resource setting.[5] The prognosis is often influenced by the aetiological factors and extent of secondary damage to the liver[3] We present our challenges and limitations in the management of patients who presented to our centre with obstructive jaundice.

Patients, Materials and Methods

This descriptive prospective study was carried out over a period of seven years. All patients with clinical and radiological diagnoses of obstructive jaundice were consecutively enrolled into the study; however, patients with medical jaundice were excluded from the study. Relevant data were obtained through a pretested paper pro forma. All patients were subjected to detailed clinical evaluation that included clinical history, examination, and radiological and laboratory investigations. Following initial clinical evaluation, the patients were optimised and prepared for surgery. Preoperative preparation involved adequate hydration with normal saline and 10% dextrose, intravenous antibiotics, and intravenous vitamin K injection (given routinely). Patients

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with a packed cell volume (PCV) of <30% after adequate hydration were transfused to maintain a stable PCV of at least 30% before surgery. All patients had a minimum of two units of blood grouped and cross-matched before surgery and those with significant derangement of international normalised ratio (INR) were made to procure fresh frozen plasma (FFP) while those with borderline INR where FFP could not be obtained were made to procure at least two units of fresh whole blood. Intravenous mannitol was given only to patients who failed to produce adequate urine after good hydration. All the patients that were considered to be satisfactorily optimised were offered open surgery and the procedures done were based on the intraoperative findings. The data collected included patients' demographic characteristics, symptom duration, presenting symptoms, preoperative diagnosis and intraoperative diagnosis, imaging detail, laboratory details (liver function test, electrolyte, urea, and creatinine values, complication, mortality, and duration of hospital admission. Caregiver or patient's telephone numbers were also collected to ensure follow-up as most patients are often lost to follow-up in our setting). Data were analysed using Statistical Package for Social Sciences (SPSS) software version 20 (IBM SPSS Inc, Chicago, IL, USA). Results were presented in form of tables, charts, and percentages. $P < 0.05$ was considered statistically significant.

Results

A total of 84 patients were diagnosed with surgical jaundice within the study period. The age range of our patients was from 28 to 89 years with a mean age of 54.8 (±2.11), with a male-to-female ratio of 1.1:1. Seventy-one (84.5%) of the cases were malignant [Table 1].

Among the malignant cases carcinoma head of the pancreas (CHP) accounted for 52 (73.2%) of the malignant cases [Table 2].

The mean duration of symptoms before presentation was 119.6 ± 13.7 days. The mean duration of symptoms among patients with benign conditions was lower compared to patients with malignant conditions (79.2 ± 8.1 vs. 125.6 ± 11.4; $P < 0.001$). The commonest reason for the presentation was pruritus followed by abdominal pain as shown in Figure 1.

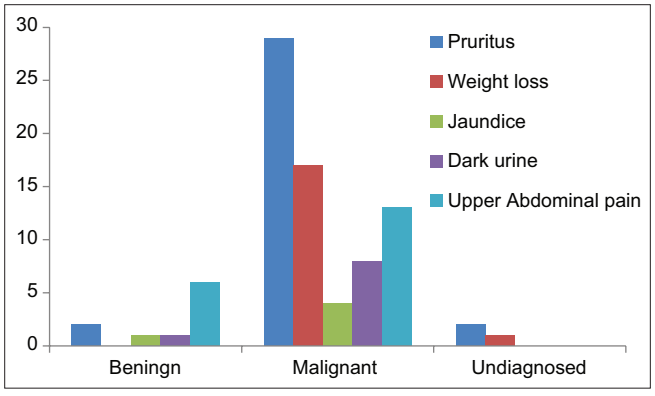

Figure 1: The clinical presentation of obstructive jaundice

All our patients had abdominal ultrasonography (USS) done as part of the initial diagnostic work-up and this helped reach a definitive diagnosis in 47 (55.9%) patients [Table 3].

Fifty-nine (66.3%) of the patients required preoperative computed tomography (CT) scans for further evaluation but only 25 (42.4%) of the patients could afford it and this was conclusive in 16 (64%) of the patients that did it. Seventeen (68%), 5 (20%), and 3 (12%) of the CT scan were done at private centres, nearby teaching hospitals, and in our centre, respectively. When preoperative radiological studies were compared with intraoperative findings cholangiocarcinoma was never diagnosed in any of the patients preoperatively. Other noninvasive radiological studies such as Magnetic resonance cholangiopancreatography (MRCP) and minimally invasive radiological studies such as percutaneous transhepatic cholangiography (PTC) and endoscopic retrograde cholangiopancreatography (ERCP) were not done in any of the patients.

All our patients did liver function tests and the results were all in keeping with the biochemical diagnosis of obstructive jaundice. The mean serum bilirubin level was 386.22 ± 14.39 umol/L. There was a statistically significant difference between the mean bilirubin level in patients with malignant and benign conditions (301 ± 9.8umol/l vs. 398.2 ± 11.4umol/L; $P < 0.001$).

Table 1: The pattern of distribution of benign and malignant causes across different age groups

Age groups	Benign	Malignant	Undiagnosed
21–30	1		
31–40	7	13	2
41–50	1	23	
51–60		22	
61–70	1	12	1
71–80		1	

Table 2: Aetiological pattern of surgical jaundice

Aetiology	*n*
Benign	
Choledocholitiasis	10
Malignant	
Carcinoma head of pancreas	52
Cholangiocarcinoma	11
Gall bladder carcinoma	8

Table 3: The diagnostic yield of ultrasound scan in different aetiological conditions

Aetiology	USS conclusive	USS not conclusive
Choledocholithiasis	9	1
CAP	33	19
Cholangiocarcinoma	0	11
Gall bladder carcinoma	5	3

USS: Ultrasound scan, CAP: Carcinoma of the pancreas

The mean serum bilirubin at one-month postoperation was 188.6 ± 4.5umol/L.

The serum albumin level of our patients ranged from 17 to 57, with a mean albumin level of 30.8 ± 5.7 g/L. Fifty-six (66.7%) of the patients had serum albumin levels <35 g/L at the time of presentation. Cholangiocarcinoma was specifically associated with low serum albumin level; as none of the patients with a such diagnosis had serum albumin level >35 mg/dl at presentation. There was a statistically significant difference between the mean serum albumin level in patients with benign conditions compared to those with malignant conditions (42.4 ± 7.4 vs. 29.2 ± 6.8; $P < 0.001$).

Sixty-one (72.6%) patients had deranged INR at the presentation.

Sixty-five (77.4%) of the patients were operated upon while 19 (22.6%) patients could not be operated upon due to unresolved renal failure in 7 (8.3%) patients with CHP and ascending cholangitis with septic shock in 3 (3.6%) and 2 (2.4%) patients with CHP and gall bladder carcinoma, respectively, while the rest 7 (8.3%) patients were referred due to industrial actions.

Ten patients with choledocholithiasis had cholecystectomy and biliary duct exploration with T-tube in place. Thirty-seven (71.2%) out of 52 patients with CHP had triple bypass while the other 5 (9.6%) patients were cases of open and close. Three (27%) and 1 (9.1%) patients among 11 patients with cholangiocarcinoma were able to benefit from palliative choledochojejunostomy and hepaticojejunostomy, respectively, with other 7 (63.6%) patients ending up in open and close procedures. Six (75%) out of eight patients with gall bladder carcinoma that were operated upon had an opened and closed procedure. None of the patients with malignant conditions that were operated upon had resectional surgery and no patients had intraoperative cholangiography.

Surgeries were delayed in 55 (84.6%) of the 65 patients that were operated upon for various reasons [Figure 2].

Thirty-one patients required dialysis around the preoperative operative period however this was done only in 12 (38.7%) of the patients. Seven (58.3%) of the dialysis were done in our centre while 5 (41.7%) were done in another nearby tertiary health-care centre due to the lack of dialysis facility for patients with hypotension.

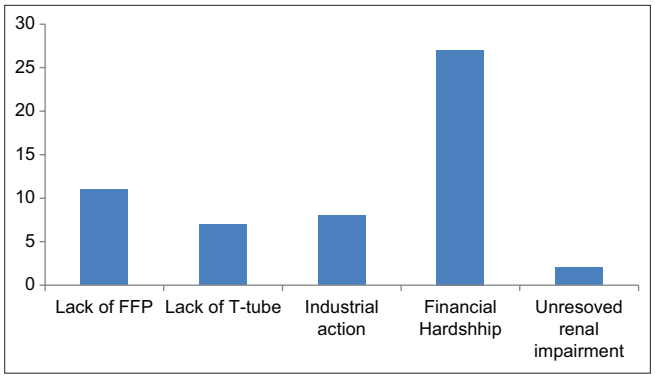

Figure 2: Causes of delayed surgical intervention

All patients with choledocholithiasis that were operated on had clinical evidence of improvement of their preoperative symptoms within a month, while 22 (59.5%) of 37 patients who had cholecystojejunostomy had progressive improvement in their symptoms over the same period with progressive deterioration of symptoms in four patients at one-month postoperative. Only 5 (26.3%) out of 19 patients with cholangiocarcinoma and gall bladder carcinoma survive beyond one-month postoperation.

The most common complication recorded was postoperative wound infection in 21 (32.3%) patients while 12 (18.4%), 3 (4.6%), and 1 (1.5%) patients had wound breakdown, Grade IV hepatic encephalopathy, and reactionary hemorrhage, respectively. Nineteen patients died within one month given a mortality rate of 21.3%; the cause of death was progression of the disease in 5 (26.3%) patients, shock secondary to reactionary hemorrhage in a patient while the exact cause of death could not be ascertained in other 13 (68.4%) patients as patients' care giver denied postmortem examination.

The mean duration of hospital stay was 16.7 ± 5.2 days.

Discussion

Obstructive jaundice is associated with high diagnostic and therapeutic challenges. This is truer in developing nations with poor diagnostic and therapeutic facilities. This is further worsened by delayed presentation as seen in our study where the majority of the patients present more than two months following the onset of symptoms. Pruritus was the major reason for presentation in our study, a symptom describes as unbearable by most patients followed by unexplained weight loss; a symptom complex associated with late disease.

Our study shows no gender preponderance as previously reported in other several studies that reported female preponderance,[1,6] lack of female preponderance in our study may be due to relatively low cases of choledocholithiasis in our study, which ordinarily in favour of the female gender in such studies that quoted female preponderance.

There is a low incidence of obstructive jaundice in the younger age group in our study and the most common aetiological factors in our study were malignant conditions a finding in keeping with previous studies[7-9] with CHP topping the chart; this is also comparable to other studies[6,7,9] but in contrast to a study done in north Indian where gall bladder carcinoma was the commonest cause[4] The benign cause seen in our study was choledocholithiasis. Postoperative benign strictures that were a relatively common cause of obstructive jaundice in developed nations were not seen may be due to relatively low indications for biliary duct exploration. Another benign cause such as

intestinal parasite was not seen as previously reported in some studies. These findings further confirmed wide variations in the aetiological causes of obstructive jaundice.

Ultrasound was the main available diagnostic imaging modality in our setting and was also relatively affordable for all our patients. This finding was similar to a previous report from other studies done in low-resource settings.[10,11] One significant finding from our study is poor diagnostic yield of USS in patients with malignant conditions. USS was conclusive in about 56% of the cases in reaching a definitive diagnosis a figure comparable to a Pakistan study.[1] About 66% of our patients required CT scans for further evaluation. However, only about 42% of the patients that required CT scans were able to afford it for various reasons such as financial incapability, and breakdown of available nearby CT scans. CT scan was completely unhelpful in about 66% of patients who did it and not beneficial in all patients with cholangiocarcinoma. Other noninvasive studies such as MRCP and some minimally invasive radiological studies such as PTC, ERCP could not be done in any of the patients due to a lack of facility in our centre and even in all nearby teaching hospitals at the time of the study; a common finding in many developing nations.[5,12]

All our patients had elevated serum total bilirubin levels at presentation with a mean serum bilirubin level of about 386 umol/L which significantly reduced to a mean level of about 188 umol/one-month postoperation among patients that were operated upon. The mean serum bilirubin was higher in patients with malignant conditions and was statistically significant. This was in agreement with a previous study that reported a similar higher level of bilirubin in malignant conditions[10] but in contrast to what were reported from some other studies.[7,9] The lower level of bilirubin in benign cases could be due to the intermittency nature of jaundice in stone diseases and pain which prompt them to present early.

The mean serum albumin level at presentation was 30.8 mg/dl. The mean serum albumin level was higher in benign conditions and shows a statistically significant difference. The higher level of mean serum bilirubin in benign conditions was probably due to the relatively shorter duration of symptoms in these patients, as the majority of patients with the benign condition present with pain which was an early symptom in cholelithiasis but rather late in malignant conditions. Also, malignant conditions tend to be associated with poor appetite from various yet-to-be-identified origins which may contribute to poor albumin levels in these patients. Patients with carcinoma of the head of the pancreas may also suffer from pancreatic insufficiency from decreased enzyme synthesis and obstruction to pancreatic flow into the duodenum thus aggravating background malabsorption seen in obstructive jaundice patients.

All patients operated upon underwent open surgical procedures as a facility for the laparoscopic procedure was not available, a situation not uncommon in many developing nations.

All patients with stone disease had open cholecystectomy plus biliary duct exploration. None of our patients had other options for managing stone disease such as transhepatic or endoscopic removal which are better options for older and unfit patients. Cholecystojejunostomy was the only procedural option for patients with CHP as they are all cases of advanced disease and resectional surgery could not be done while hepaticojejunostomy and choledochojejunostomy were offered as palliative options for patients with cholangiocarcinoma surgeries were delayed in about 85% of the patients for various reasons such as lack of T-tube, delay in procurement of FFP and other blood products associated with poor blood banking system, unresolved renal impairment, financial hardship, and industrial action which were not uncommon in many developing nations.

Though several trials have challenged the traditional use of t-tubes following biliary tract exploration and such trials advocated for primary closure,[13-15] however in our study we did not attempt to operate any patient that required common bile duct exploration as a facility for postoperative clot extraction in the common bile duct are not available if a patient should form a clot blocking the tract.

In situations where FFP could not be procured and patients were hemodynamically stable with borderline INR such patients were asked to make available fresh whole blood. Procurement of fresh whole blood involves initial routine screening of the donors the night before scheduled surgery and such screened compatible donors were bled at the blood bank on the morning of the surgery.

The postoperative complication rate of 57% reported from our study was higher compared to previous study reports.[12] One of the possible explanations for the higher postoperative complication rate in our study was a relatively higher incidence of postoperative wound infection rate compared to other similar studies and this could be a reflection of the poor nutritional status of our patients and relatively higher bilirubin level reported in our study; both factors are known to decrease patient's immunity thus making our patients prone to infection. Another possible observed nondocumented factor for higher a wound infection rate in our patients was poor compliance to antibiotics use. The mortality rate reported in our study was about 21% a figure within the previously reported mortality rate of 8%–33%[16-18] this high mortality rate could be attributed to late presentation coupled with delayed definitive treatment intervention and higher prevalence of malignant conditions seen in our setting.

USS remains an important imaging modality in patients with obstructive jaundice; however, its diagnostic yield was poor in malignant conditions. However, this should not preclude its use in suspected malignant cases as USS demonstration of a dilated common bile duct and hepatic duct are useful in determining patients that are more likely to benefit from surgical intervention irrespective of the aetiological cause.

Financial hardship was responsible for delayed CT scans in some patients yet a significant number of patients could not afford it and were eventually operated upon. We thus suggest that in low resource setting, patients who had a reasonable demonstration of dilatation of both hepatic and common bile ducts on USS should be offered surgery without delay on account of the nonavailability of a CT scan. This is because such patients are more likely to benefit from palliative bypass care, as the occurrence of symptoms in most jaundice patients suggest late diseases and further delay in such patients' surgery will only worsen the derangement of liver functions and other biochemical profiles.

The unavailability of a t-tube was one of the factors that was responsible for delayed surgery in some patients, we thus suggest, based on recent trials on the outcome of common bile duct exploration without the use of t-tube insertion, thus lack of t-tube need not delay surgery and surgeons should minimize trauma to biliary tract when extracting stones to minimize the risk of bleeding and clot formation along the tract.

Limitations of the study

Diagnosis of the malignant pancreatic tumour was based on an intraoperative finding of the hard pancreas; this might have overestimated the number of actual cases of malignant conditions, as some of these lesions may have been cases of chronic pancreatitis. The histological diagnosis was not reviewed as many of the biopsy results were not conclusive. Low certainty in a tissue diagnosis of the pancreatic lesion is not an uncommon diagnostic dilemma and, in many instances, pancreatic tumours are often located within a shell of pancreatic fibrosis in patients with chronic pancreatitis co-existing with a pancreatic tumour.

Conclusion

Obstructive jaundice is a common surgical condition in our environment. The diagnosis and treatment are often met with challenges and limitations. The majority of the cases are malignant conditions with advanced disease thus making palliative procedure the only option of treatment. Late presentation and lack of modern diagnostic and therapeutic facilities are responsible for poor outcomes.

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Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Mohamed S, Syed AI. Management of obstructive jaundice: Experience in a tertiary care surgical unit. Pak J Surg 2007;23:23-5.
2. Ahmad I, Jan AU, Ahmad R. Obstructive jaundice. J Postgrad Med Inst 2001;15:194-8.
3. Briggs CD, Peterson M. Investigation and management of obstructive jaundice. Surgery 2007;25:74-80.
4. Sharma MP, Ahuja V. Aetiological spectrum of obstructive jaundice and diagnostic ability of ultrasonography: A clinician's perspective. Trop Gastroenterol 1999;20:167-9.
5. Bekele Z, Yifru A. Obstructive jaundice in adult Ethiopians in a referral hospital. Ethiop Med J 2000;38:267-75.
6. Syed N, Mohammad SA, Umair UI, Shafiq UR. Etiological spectrum of obstructive jaundice. Med Channel 2010;16:299-301.
7. Lawal D, Oluwole S, Makanjuola D, Adekunle M. Diagnosis, management and prognosis of obstructive jaundice in Ile-Ife, Nigeria. West Afr J Med 1998;17:255-60.
8. Moghimi M, Marashi SA, Salehian MT, Sheikhvatan M. Obstructive jaundice in Iran: Factors affecting early outcome. Hepatobiliary Pancreat Dis Int 2008;7:515-9.
9. 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;20:62-6.
10. Cheema KM, Ahmad F, Gondal SH. Evaluation of etiological incidence and diagnostic modalities in obstructive jaundice. Pak Postgrad Med J 2001;12:160-4.
11. Admassie D, H/Yesus A, Denke A. Validity of ultrasonography in diagnosing obstructive jaundice. East Afr Med J 2005;82:379-81.
12. Chalya PL, Kanumba ES, McHembe M. Etiological spectrum and treatment outcome of obstructive jaundice at a university teaching hospital in north western Tanzania: A diagnostic and therapeutic challenges. BMC Res Notes 2011;4:147.
13. Ahmed I, Pradhan C, Beckingham IJ, Brooks AJ, Rowlands BJ, Lobo DN. Is a T-tube necessary after common bile duct exploration? World J Surg 2008;32:1485-8.
14. Ambreen M, Shaikh AR, Jamal A, Qureshi JN, Dalwani AG, Memon MM. Primary closure versus T-tube drainage after open choledochotomy. Asian J Surg 2009;32:21-5.
15. van der Gaag NA, Rauws EA, van Eijck CH, Bruno MJ, van der Harst E, Kubben FJ, *et al.* Preoperative biliary drainage for cancer of the head of the pancreas. N Engl J Med 2010;362:129-37.
16. Buckwalter JA, Lawton RL, Tidrick RT. Bypass operations for neoplastic biliary tract obstruction. Am J Surg 1965;109:100-6.
17. Hussain SM, Fatima T. Operative mortality and morbidity of obstructive jaundice. Ann Abbasi Shaheed Hosp Kar Med Dent Coll 2000;5:211-4.
18. Nakayama T, Ikeda A, Okuda K. Percutaneous transhepatic drainage of the biliary tract: Technique and results in 104 cases. Gastroenterology 1978;74:554-9.