

Aetiology of Obstructive Jaundice in Ghana: A Retrospective Analysis in a Tertiary Hospital

Abstract

Background: Obstructive jaundice is a term that describes the clinical entity of yellowness of the skin and mucous membranes due to the inability of bile to flow freely into the duodenum. This is commonly due to mechanical or physiological blockage of either the intrahepatic or extrahepatic bile ducts. Malignancies are responsible for the most cases of obstructive jaundice in our locality. **Aim:** The study sought to analyse all cases of obstructive jaundice that presented to a tertiary referral centre over a 36-month period, to determine the age at presentation, sex distribution, and aetiological spectrum. **Study Design:** Retrospective cross-sectional study. **Study Setting:** Korle-Bu Teaching Hospital, Accra, Ghana. **Materials and Methods:** This was a hospital-based study of all cases of obstructive jaundice that were seen over a 36-month period from May 2017 to April 2020, at the Hepatobiliary Unit of the Korle-Bu Teaching Hospital. The unit serves as a referral centre for all liver, pancreas, and biliary tract cases, including cases presenting with obstructive jaundice. The demographic data and diagnosis of all cases of obstructive jaundice seen over the study period were retrieved from both out-patient and in-patient records. **Results:** Three hundred and sixty cases of obstructive jaundice were studied; 141 (39.2%) were males and 219 (60.8%) were females, giving a male-to-female ratio of 1:1.6. The mean age of the patients was 56.8 (SD, 15.9) years. Malignant conditions accounted for 314 (87.2%) cases, whilst 46 (12.8%) were due to benign conditions. The mean age of the patients with benign conditions (40.4 [SD, 15.7] years) was significantly lower than that of those with malignant conditions (59.4 [SD, 14.9] years) ($P < 0.0001$). There was no significant difference in sex ratios between patients with malignant and benign causes ($P = 0.996$). Pancreatic head cancer was the commonest malignant cause of obstructive jaundice accounting for 139 (38.61%), followed by gallbladder tumour, 81 (22.5%), whilst choledocholithiasis (23 [6.39%]) was the commonest benign cause of obstructive jaundice. **Conclusion:** Obstructive jaundice in our setting was more prevalent in females. Malignant aetiologies were more common than benign ones: pancreatic head and gallbladder cancers were the commonest malignancies, whilst choledocholithiasis was the commonest benign cause. Malignant causes occurred in older patients than benign conditions, but there was no difference in sex ratios between the two categories.

Keywords: Aetiological spectrum, biliary tract, gallstone, obstructive jaundice, pancreatic cancer

Introduction

Obstructive jaundice is a term that describes the clinical entity of yellowness of the skin and mucous membranes due to the inability of bile to flow freely into the duodenum. This is usually due to mechanical or physiological causes affecting either the intrahepatic or extrahepatic bile ducts. The blockage leads predominantly to direct hyperbilirubinaemia that accounts for the features of jaundice, dark urine, pruritus, and pale stools.^[1] The most common malignant causes of obstructive jaundice are lesions in the head of the pancreas, the gallbladder, or the bile duct, whereas gallstones are the most common benign causes.^[2] The diagnosis of

pancreatic cancer is often made after the age of 55 years and is therefore defined as a disease of the elderly.^[3] Tri-phasic pancreatic-protocol using computer tomography (CT) or magnetic resonance imaging (MRI) scans is adequate for confirming the diagnosis of pancreatic cancer. For resectable pancreatic tumours, surgical resection presents the best curative treatment.^[4] Gallbladder cancer is very rare and has a high mortality.^[5,6] The asymptomatic nature of the disease and the high tendency to spread to other parts of the body result in a majority of the disease being diagnosed at intermediate to advanced stages for which there are no effective remedies.^[6] Gallbladder cancer causes obstructive jaundice through the direct infiltration of the common bile duct (CBD) along the cystic duct or lymph node

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metastasis to the porta hepatis.^[7] Diagnosis is confirmed by contrast-enhanced CT scan or MRI. Radical cholecystectomy with adjuvant chemo-radiation offers the best chance of long-term survival.^[8]

Cholangiocarcinoma, which is a cancer of the bile duct, is one of the leading causes of obstructive jaundice, with a poor prognosis. Cholangiocarcinoma is a malignant tumour arising from bile duct epithelium that causes partial or complete occlusion of the bile duct. It is the second most common primary liver cancer in the world.^[9,10]

Cholangiocarcinoma occurs in people over the age of 50. The median age ranges from 55 to 75 years, but there has been a record of younger sufferers of the disease.^[11] It affects men more than women, but some studies have reported equal prevalence in both sexes.^[12] There is improved overall survival when an adjuvant therapy is combined with surgery in the treatment of cholangiocarcinoma.^[13]

Gallstones are the commonest benign cause of obstructive jaundice.^[14] The stones get impacted in the lumen of the CBD causing intraluminal obstruction to the flow of bile into the duodenum. Choledocholithiasis develops in about 10%–20% of patients with gallbladder stones worldwide.^[14,15] Screening ultrasound combined with magnetic resonance cholangiopancreatography (MRCP) adequately confirms the presence of CBD stones.^[14,15] Open or laparoscopic cholecystectomy and CBD exploration for the retrieval of stones are the treatments of choice. The retrieval of stones can also be achieved via endoscopic retrograde cholangiopancreatography.^[14,15] Duodenal tumours are considered rare tumours in the gastrointestinal (GI) tract and represent less than 1% of all GI tumours.^[16] They present as obstructive jaundice when the ampulla of Vater is infiltrated by the tumour.^[17] Diagnosis is confirmed by gastroduodenoscopy where the tumour may be visualised and biopsied, followed by a CT scan to stage and also determine resectability. Pancreaticoduodenectomy is the treatment of choice followed by adjuvant chemotherapy.^[16]

In the Korle-Bu Teaching Hospital, comprehensive data on the causes and socio-demographic characteristics of patients with obstructive jaundice are lacking. The current study therefore aimed to analyse the age at presentation, sex distribution, and the aetiology of patients who presented with obstructive jaundice to the hospital over a 3-year period.

Materials and Methods

This was a hospital-based retrospective study of all cases of obstructive jaundice that were seen over a 36-month period from May 2017 to April 2020, at the Hepatobiliary Unit of the Korle-Bu Teaching Hospital in Accra, Ghana. The unit serves as a referral centre for cases of obstructive jaundice from across Ghana. The diagnosis of obstructive jaundice was based on the presence of predominantly direct hyperbilirubinaemia and a dilated biliary system on imaging (ultrasound, CT scan, MRI, or

MRCP). All images were reviewed again at a multidisciplinary meeting led by the radiology department, in order to confirm or rule out other differential diagnosis responsible for biliary obstruction such as sclerosing cholangitis, primary biliary cirrhosis, and physiological or drug-induced cholestasis. Cases with incomplete data were excluded from the analysis. The demographic data and diagnosis of all cases of obstructive jaundice seen over the study period were retrieved from the outpatient and in-patient records. Data were entered into Microsoft Excel 2013 and cleaned. Frequencies and percentages were run for aetiologies of obstructive jaundice. Mean ages and sex ratios were calculated. Categorical variables were compared using Chi-square test and numerical variables compared using the Student t-test. Differences were considered significant if $P < 0.05$.

The study was approved by the Scientific and Technical Committee of the Korle-Bu Teaching Hospital (ID number: STC 00079/2020).

Results

Three hundred and sixty cases of obstructive jaundice were retrieved from the records. There were 141 males (39.2%) and 219 females (60.8%), giving a male-to-female ratio of 1:1.6. The mean age of the patients was 56.8 (SD, 15.9) years. Malignant causes of obstructive jaundice were seen in 314 (87.2%) and benign causes in 46 (12.8%) [Table 1]. The mean age of patients with benign causes (40.4 [SD, 15.7] years) was significantly lower than that of malignant causes (59.4 [SD, 14.9] years) ($P < 0.0001$). Eighteen (39.1%) of the patients with benign conditions were males, whilst 123 (39.2%) of those with malignant conditions were males. There was no significant difference in the sex ratios between those with benign and those with malignant conditions ($P = 0.996$).

The commonest cause of obstructive jaundice was tumour of the head of pancreas 139 (38.61%), followed by gallbladder tumour 81 (22.5%), cholangiocarcinoma 43 (11.94%), and periampullary tumour 27 (7.50%). The commonest benign cause was gallstones followed by benign common bile strictures. None of those with strictures had any past history of biliary surgery or instrumentation.

Another group classified as “others” in our results contributed to 6.67% of the causes of obstructive jaundice. These included malignancies such as retroperitoneal tumours infiltrating the periampullary region, and secondary metastasis to the porta hepatis lymph nodes from colon, breast, and gastric tumours, 9 (2.50%). The benign conditions that contributed to “others” were drug-induced cholestasis, autoimmune hepatitis, and choledochal cyst, 15 (4.17%), which presented to the surgical department for further evaluation.

Discussion

The results of the study showed a female preponderance of obstructive jaundice of 60.8%. This is at variance with some studies done previously in Nigeria where more males presented

with obstructive jaundice than females.^[18,19] However, a report from Tanzania has recorded more females than males presenting with obstructive jaundice,^[20] similar to our results. A study in China by Sha *et al.* found more males (64.5%) amongst 155 patients with malignant obstructive jaundice undergoing biliary drainage.^[21] Our results showed almost identical sex ratios between benign (62.9% female) and malignant (61.7% female) causes of obstructive jaundice.

The mean age of patients in our study was 56.8 years. The mean ages of patients with obstructive jaundice in two studies in Nigeria by Lawal *et al.*^[18] and Rahman *et al.*^[19] were 55 and 42 years, respectively, indicating mean ages of less than 60 years. The average age of malignant obstructive jaundice in this study was 58.9 years. This finding is in contrast with the mean ages of above 65 years that are found amongst non-African populations.^[2,22] Further study into the risk factors is required to explain the early onset of the disease in Sub-Saharan Africa. A significant difference was found between the mean age of benign (40.4 years) and that of malignant cause (59.4 years) of obstructive jaundice. Lawal *et al.*, in Nigeria, also found that patients with malignancies were older than those with benign disease.^[18] The probable reason may be the fact that malignancies are more common in the elderly than younger patients.

The commonest cause of obstructive jaundice in our study was tumour of the head of the pancreas (38.6%). This is consistent with other studies in Nigeria^[18,19] and other parts of the world where pancreatic cancer was found to be the commonest cause of obstructive jaundice.^[2] Choledocholithiasis was the fifth commonest aetiology of obstructive jaundice, despite the previously reported rising incidence of gallstones in Accra about two decades ago.^[23] This finding might be an indication of a further change in the trend of disease patterns or may be due to the catchment area of the Hepatobiliary Unit. However, it could also be attributable to better expertise of the peripheral referring centres at handling the less complex cholelithiasis and therefore having to refer only complex cases like tumours. Choledocholithiasis was followed by benign CBD strictures in the benign aetiology of obstructive jaundice. These strictures were most likely due to chronic irritation and inflammation by

gallstones, as these patients did not have any history of biliary surgery or instrumentation.

Gallbladder tumour was the second most common cause of obstructive jaundice (22.5%) amongst the cases seen in our study. Siddique *et al.* from Pakistan also found a similar trend where gallbladder cancer was the second most common malignant cause of obstructive jaundice.^[24] This may be due to improved diagnosis and not necessarily an increase in the incidence of cases. The prevalence of chronic inflammation that may explain the high prevalence of gallbladder cancer in our study has not been extensively studied in our environment.

Clinicians should have a high index of suspicion for malignancy in the evaluation of obstructive jaundice even if the age of presentation is less than what is typically reported in the literature. This will ensure early diagnosis and offer an opportunity for surgical resection, which offers the best prospect towards a long-term survival.

This study had some limitations. The data may not be truly representative of the national situation of obstructive jaundice, as our institution is a referral centre and so is likely to receive only complex cases of obstructive jaundice. The noninclusion of histopathology in the analysis may affect the reliability of some of the diagnoses. The study findings, however, provide some baseline information for further studies on the pattern and epidemiology of obstructive jaundice in Ghana.

Conclusion

Obstructive jaundice in our setting was more prevalent in females. Malignant aetiologies were more common than benign ones: pancreatic head and gallbladder cancers were the commonest malignancies, whilst choledocholithiasis was the commonest benign cause. Malignant causes occurred in older patients than benign conditions, but there was no difference in sex ratios between the two categories.

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Authors' contribution

OKA conceived the idea, designed and wrote the article. CN and DO undertook data collection and contributed to the writing of the article. FO, AAYA, BDS, KT, AAN, and TA reviewed the article and contributed to the writing of the final article.

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Conflicts of interest

There are no conflicts of interest.

Table 1: Aetiology of obstructive jaundice

Aetiology	Number of cases, N (%)
Malignant causes	
Tumour of head of pancreas	139 (38.61)
Gallbladder tumour	81 (22.50)
Cholangiocarcinoma	43 (11.94)
Periampullary tumour	27 (7.50)
Duodenal tumour	15 (4.17)
Others	9 (2.50)
Benign causes	
Gallstones	23 (6.39)
Benign CBD strictures	8 (2.22)
Others	15 (4.17)
Total	360 (100)

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