International Surgery Journal
Murshid MY et al. Int Surg J. 2024 Apr;11(4):561-566
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: https://dx.doi.org/10.18203/2349-2902.isj20240684

Original Research Article

Exploring the causes of obstructive jaundice: a single-centre retrospective analysis

Mohsin Yahya Murshid[1]*, Abdulellah Talal Al-Hazmi[2], Farrukh Alim Ansari[1]

[1]Department of General Surgery, Hera General Hospital, Makkah, Kingdom of Saudi Arabia
[2]Department of General Surgery, King Abdulaziz Hospital, Makkah, Kingdom of Saudi Arabia

Received: 25 February 2024
Revised: 11 March 2024
Accepted: 12 March 2024

***Correspondence:**
Dr. Mohsin Yahya Murshid,
E-mail: mohsin.murshid90@outlook.com

ABSTRACT

Background: Obstructive jaundice is a condition caused by bile flow blockage and has various benign and malignant etiologies. Accurate and timely diagnosis is essential for effective treatment, particularly in cases of possible malignancy. Advances in diagnostic methods have improved our understanding and management of diseases. This study aimed to investigate the causes and clinical presentation of obstructive jaundice in Saudi Arabian population.
Methods: This study included 193 patients diagnosed with obstructive jaundice admitted to the surgical wards from January 2019 to December 2022. Methods involved comprehensive clinical evaluations, medical history reviews, physical examinations, laboratory tests, and diagnostic imaging to identify the underlying disease. Data were collected systematically and statistically analyzed.
Results: The study included 193 patients with a male-to-female ratio of 1:1.4, and an average age of 54.10 years. Malignant causes, primarily carcinoma of the pancreatic head, accounted for 59.4% of cases, while benign causes, notably choledocholithiasis, accounted for 41.6%. Symptoms included jaundice, abdominal pain, and loss of appetite, with treatment varying according to the identified cause.
Conclusions: The study highlights that obstructive jaundice is more commonly found in females and tends to be caused by benign conditions in younger people, while malignant causes are more prevalent in older individuals. The most common malignant cause is carcinoma of the pancreatic head, and leading benign cause is choledocholithiasis. For diagnosing obstructive jaundice, key imaging techniques include magnetic resonance cholangiopancreatography (MRCP), endoscopic retrograde cholangiopancreatography (ERCP), and computed tomography (CT).

Keywords: Obstructive jaundice, HPB surgery, Choledocholithiasis, General surgery

INTRODUCTION

Obstructive jaundice is a prevalent surgical condition characterized by obstruction of the conjugated bilirubin passage from the liver to the intestine.[1] It presents notable difficulties for general surgeons and makes a substantial contribution to morbidity and mortality rates.[2] Prompt diagnosis of the cause of obstruction, particularly in malignant cases, is crucial, as surgical resection is a viable option at this stage.[3,4] The causes of biliary obstruction are multifaceted, involving both being and malignant factors, and their occurrence differs among geographic areas and individuals.[5,6] Timely and accurate determination of the origin of obstructive jaundice is crucial for enhancing the well-being and chances of survival of patients, especially in cases where cancer is involved.[3] Operating on patients with jaundice increases the risk of postoperative complications, particularly those related to infection, bleeding, delayed wound healing, and kidney issues.[7,8] Despite recent advancements in

preoperative diagnosis and postoperative care, obstructive jaundice continues to pose a significant risk of morbidity and mortality. Understanding the factors that lead to higher morbidity and mortality in these patients is crucial for guiding suitable treatment and enhancing survival rates.[9-11]

A significant proportion of the cases were attributed to choledocholithiasis. Patients typically present with characteristic symptoms including yellowing of the skin and eyes, pale stools, dark urine, jaundice, and pruritus, although abdominal pain can sometimes be misleading.[12] Patients with obstructive jaundice are susceptible to nutritional deficits, infectious complications, acute renal failure, cardiovascular dysfunction, coagulopathy, hypovolemia, and endotoxemia, which exacerbates morbidity and mortality.[13] Recent advancements in technical imaging have significantly improved the diagnosis of conditions affecting the biliary tract. A broad range of diagnostic methods, including invasive procedures such as ERCP and percutaneous transhepatic cholangiography (PTC), along with noninvasive tests such as ultrasonography (USG), multidetector CT (MDCT), and magnetic resonance imaging (MRI), are available for diagnosing the underlying disease.

The findings of this study will contribute to the existing body of knowledge on obstructive jaundice and provide valuable insights for health care professionals in Saudi Arabia. Additionally, understanding local etiological factors and clinical manifestations can aid in the development of targeted prevention and treatment strategies for patients in this specific geographical setting.

METHODS

This was a retrospective study conducted at department of general surgery, Hera general hospital, Makkah over a three-year period from January 2019 to December 2022. The study involved patients admitted to the surgical wards with clinical diagnosis of obstructive jaundice. This study aimed to analyze the specific etiologies and clinical features of patients with obstructive jaundice. The sampling technique used in this study was the convenient sampling method. This study included all those patients which presented with features suggestive of obstructive jaundice and later received confirmatory diagnosis through standard imaging modalities. Patients with medical jaundice were excluded from the study. Every patient underwent a comprehensive evaluation, including a thorough medical history and clinical examination. Laboratory investigations included liver function tests (LFTs) to assess bilirubin levels as well as serum alkaline phosphatase, ALT, and AST levels. Additional laboratory tests included white blood cell count, packed red blood cell volume, prothrombin time, and serum creatinine and albumin level measurements. Abdominal ultrasonography was the initial diagnostic imaging modality employed for all patients. Subsequent to the findings of the ultrasound examination and manifestation of clinical indicators, supplementary imaging techniques, MRCP and CT-abdomen, were performed.

The data were entered into a Microsoft excel spreadsheet and analyzed using statistical package for the social sciences software. For descriptive statistics, the means and standard deviations were calculated. Inferential statistics were analyzed using the chi-squared test and Fischer's exact test.

Ethical considerations

The study has been conducted in accordance with the ethical principles mentioned in the declaration of Helsinki. The study was conducted after receiving ethical approval from the institutional research ethics committee. reference no-H-03-F-086-4569-776, dated-18/02/2023.

RESULTS

During the investigation period, 193 patients with obstructive jaundice were included in the study. Among them, 64 (33.16%) were male, and 129 (66.84%) were female. Their ages varied from 17 to 88 years, with an average age of 54.10±16.76 years. The average age for patients with benign causes was 43.45±12.16 years, while for those with malignant causes, it was 69.27±8.31 years. The age distribution disparity between the benign and malignant cases was statistically significant ($p<0.001$). Occurrence of both benign and malignant obstructive jaundice was higher in females than in males, and this difference statistically significant ($p<0.001$) (Table 1).

The underlying cause of obstructive jaundice was benign in 114 (59.4%) cases, whereas 79 (41.6%) patients had malignant causes. Choledocholithiasis was the most common cause in the benign group, occurring in 87 (76.31%) patients, whereas carcinoma of the head of the pancreas was the most common tumor in the malignant group, affecting 28 (35.44%) patients. Table 2 provides an overview of various causes of obstructive jaundice.

A comprehensive overview of the clinical manifestations of obstructive jaundice, encompassing both benign and malignant etiologies, is provided in Table 3. Jaundice is the most frequently observed symptom, appearing in 91.13% of all patients with a malignant cause and in 81.57% of those with a benign cause. Other frequently reported symptoms included abdominal pain (86.52%) and steatorrhea (76.12%). Patients with a malignant etiology also commonly experience dark urine, an abdominal mass, and weight loss when compared to those with a benign etiology.

LFTs were performed in all cases, and the results indicated increased levels of bilirubin and alkaline phosphatase in both the benign and malignant groups. Abdominal ultrasonography, CT, and MRI were performed on all patients. The results revealed that 38.9% of benign cases and 82.6% of malignant cases exhibited

dilated intrahepatic and extrahepatic ducts, respectively. It is important to note that ERCP and PTC procedures were not performed at our institution because of a lack of necessary facilities, and patients were referred to a higher center to undergo these interventions.

All instances of malignant disease were transferred to a tertiary care center for further evaluation and treatment. For benign cases, treatment was tailored to the specific cause. Patients with CBD stones were directed to a tertiary center for ERCP as a daily procedure and then returned to our hospital for monitoring. Among them, 23 patients underwent laparoscopic cholecystectomy immediately after ERCP during the same hospitalization period, while remainder received follow-up in outpatient department and underwent delayed laparoscopic cholecystectomy 4-6 weeks after their initial presentation. In 12 cases of CBD stones, the initial ERCP was unsuccessful because of the presence of a large impacted stone in distal CBD. These patients were referred for sphincterotomy, and successful ERCP was performed 2-3 days later. Benign strictures were also referred to tertiary center for definitive/palliative management depending on specific requirements. Regarding Mirizzi syndrome, out of 10 cases identified, 4 were operated at our facility and underwent laparoscopic cholecystectomy. However, in 3 of these cases, procedure had to be converted to open cholecystectomy due to CBD injury.

Table 1: Baseline characteristics of study subjects.

Variables		N	Percentage (%)
Mean age (in years)	Malignant cases	69.27	
	Benign cases	43.45	
Diagnosis	Malignant causes	79	41
	Benign causes	114	59
Age group (in years)	16-25	8	4.14
	26-35	22	11.39
	36-45	37	19.17
	46-55	32	16.58
	56-65	33	17.09
	66-75	41	21.24
	>75	20	10.36
Sex	Male	78	40.41
	Female	115	59.59

Table 2: Etiology of obstructive jaundice among study subjects.

Cause	N	Percentage (%)
CBD stone	87	45.07
Benign stricture	15	7.77
Mirizzi syndrome	10	5.18
Iatrogenic	2	1.03
Ca head of pancreas	28	14.5
Periampullary carcinoma	14	7.25
Cholangiocarcinoma	12	6.21
HCC	10	5.18
Gb carcinoma	6	3.15
Liver metastasis	9	4.66
Total	193	100

Table 3: Pattern of clinical presentation of study subjects.

Clinical presentation	Malignant cause (n=79)	Benign causes (n=114)	Total (n=193)	Percentage (%)
Jaundice	72	93	165	85.50
Pain abdomen	62	96	158	81.86
Itching	43	86	129	66.80
Fever with chills	14	64	78	40.41
Loss of appetite	72	74	146	75.64
Loss of weight	48	18	66	34.19
Steatorrhea	55	68	123	63.73
Dark urine	53	16	128	35.75
Mass per abdomen	51	2	53	27.46

DISCUSSION

Obstructive jaundice is not a standalone medical condition; rather, it serves as an indicator of an underlying disease that affects the liver, gallbladder, or pancreas. Typically, it necessitates surgical treatment, earning it the label of "surgical jaundice".[14] Obstructive jaundice presents considerable diagnostic and treatment complexities for general surgeons and plays a substantial role in increasing the rates of illness and death.[4] In the present study, 193 patients with obstructive jaundice were included in the defined study period. Females were more affected (59.59%) with obstructive jaundice than males with an M:F ratio of 1:1.4. Various studies have reported differences in the male and female predominance. In a study carried out by Chalya et al there was a female preponderance at 1:1.3, while other studies have the following M:F ratio: Talpur et al-1:2.32; Lawal et al-1:0.78; Sharma et al-1.05:1.15-18, Anand et al-1.105, Khan et al-1.25:1, Attiri et al-1.2:1.[15-20]

In the current study, it was observed that older age groups were more frequently affected by malignant causes than their younger counterparts were. The average age of patients with benign causes was 43.45 years with a standard deviation of 12.16, while for those with malignant causes, it was 69.27 years with a standard deviation of 8.31. Chalya et al reported an average age of 56.34 years among their study participants, whereas Khan et al noted a similar average age of 56.68 years.[15,19] Shukla et al found that the mean age of onset of obstructive jaundice was 48.5 years in their study.[21] In a study by Sharma et al mean age was reported as 62.5 years.[4] It is worth noting that several other studies have also reported that comparable age groups are affected by obstructive jaundice.[16-18]

Our study revealed that 59% of the patients exhibited malignant causes for their development, while 41% of the patients had benign causes. Anand et al conducted a study on the clinical profile and treatment modalities for obstructive jaundice and reported that choledocholithiasis was the most frequent cause, followed by malignancy.[18] Gupta et al found that 63.89% of cases had malignant causes, and 36.11% had benign causes.[22] Sharma et al reported a higher prevalence of malignant causes (75.3%) of obstructive jaundice.[4] Similar results were observed in a study in Tanzania, where malignant causes were more common at 58.6%, with carcinoma of head of pancreas being the leading cause, accounting for 37.9% of all cases.[15] Table 4 provides a comparison of findings of various studies on etiological spectrum of this condition.

Table 4: Comparison of findings in various similar studies.

Etiology	Sharma et al[4] (%)	Chalya et al[15] (%)	Khan et al[19] (%)	Gupta et al[22] (%)	Khurram et al[26] (%)	Aziz et al[27] (%)	Fatima et al[28] (%)	Munir et al[29] (%)	This study (%)
Cancer of head of pancreas	26.5	64.7	25.87	60.87	30	31	22.8	14.2	14.5
Cholangiocarcinoma	10.8	11.8	15.92	17.39	11.6	10	2.4	6.12	6.21
Periampullary carcinoma	9.8	8.8	9.45	8.89	1.66		3.9	5.45	7.25
Carcinoma gall bladder	28.7	8.8	-	-	13.3	52	20.5	2.4	3.15
Hepatocellular carcinoma	-		-	-	-	7	-	-	5.18
Liver metastasis	-	5.9	7.46	4.35	-	-	-	-	4.66

Obstructive jaundice commonly manifests as jaundice (85.50%), abdominal pain (81.86%), and loss of appetite (75.64%). A study by Khan et al which involved 201 patients, reported similar findings. They found jaundice to be the most prevalent symptom in 97.51% of patients, followed by loss of appetite (79.60%), weight loss (76.12%), and abdominal pain (61.69%).[19] These results are consistent with a study conducted by Chalya et al involving 116 patients, with symptoms including jaundice in 100% of cases, clay-colored stools in 89.6%, pruritus in 77.6%, abdominal pain in 58.6%, weight loss in 61.2%, and an abdominal mass in 51.8%.[15] Furthermore, Wagensveld et al who studied 126 patients, found that jaundice was common presenting symptom in 90% of the patients and weight loss in 82%.[23] This clinical pattern aligns with the findings of other studies as well.[24-26]

Limitations

This study is limited by its retrospective nature, single-center design and use of convenience sampling. These factors introduce bias, reduce control over confounding variables, and limit the findings' generalizability and applicability to a broader population.

CONCLUSION

Research findings suggest that obstructive jaundice is more commonly detected in females, with a higher prevalence of benign etiologies. Benign illnesses have a propensity to affect individuals in younger age cohorts, while malignant causes exhibit a higher prevalence among older populations. The most frequently observed malignant condition is carcinoma of the pancreatic head,

whereas the leading benign cause is choledocholithiasis. Diagnostic modalities such as MRCP, ERCP, and CT are of paramount importance in the diagnosis of individuals presenting with obstructive jaundice.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Mohamed S, Syed AI. Management of Obstructive Jaundice: Experience in a tertiary care surgical unit. Pak J Surg. 2007;23(1):23-5.
2. Ahmad I, Jan AU, Ahmad R. Obstructive Jaundice. J Postgrad Med Inst. 2001;15(2):194-8.
3. Briggs CD, Peterson M. Investigation and management of obstructive jaundice. Surgery (Oxford). 2007;25(2):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(4):167-9.
5. Roche SP, Kobos R. Jaundice in the adult patient. Am Family Physician. 2004;69(2):299-304.
6. Moghimi M, Marashi SA, Salehian MT, Sheikhvatan M. Obstructive jaundice in Iran: factors affecting early outcome. Hepatobiliary Pancreat Dis Int. 2008;7(5):515-9.
7. Hussain S, Abbas M, Fatima T. Operative mortality and morbidity of obstructive jaundice. Ann Abbassi Shaheed Hospital Karachi Med Dental College. 2000;5:211-4.
8. Uslu A, Nart A, Colak T, Aykas A, Yüzbasioglu MF, Hidir K, Dogan M, et al. Predictors of mortality and morbidity in acute obstructive jaundice: implication of preventive measures. Hepatogastroenterology. 2007;54(77):1331-4.
9. 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;32(6):633-8.
10. Nakayama T, Ikeda A, Okuda K. Percutaneous transhepatic drainage of the biliary tract: technique and results in 104 cases. Gastroenterology. 1978;74(3):554-9.
11. Buckwalter JA, lawton RL, Tidrick RT. Bypass operations for neoplastic biliary tract obstruction. Am J Surg. 1965;109(1):100-6.
12. Bonheur JL, Ells PF, Talavera F, Anand BS, Kapoor VK, Minocha A. Biliary Obstruction. MedScape. Available at: https://emedicine.medscape.com/article/187001-overview. 162019. Accessed on 10 January 2024.
13. Shrikhande SV, Barreto G, Shukla PJ. Pancreatic fistula after pancreaticoduodenectomy: the impact of a standardized technique of pancreaticojejunostomy. Langenbecks Arch Surg. 2008;393(1):87-91.
14. Assy N, Jacob G, Spira G, Edoute Y. Diagnostic approach to patients with cholestatic jaundice. World J Gastroenterol. 1999;5(3):252-62.
15. 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;4:147.
16. Talpur HKA, Mahmood Malik A, Iqbal Memon A, Naeem Qureshi J, Khan Sangrasi A, Laghari AA. Biliary bypass surgery - Analysis of indications and outcome of different procedures. Pak J Med Sci. 2013;29(3):799-802.
17. 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(4):255-60.
18. Anand S, Panda C, Senapati AT, Behera MR, Thatei C. A study on incidence, clinical profile, and management of obstructive jaundice. J Evid Based Med Healthc. 2016;3(59):3139-45.
19. Khan ZA. Clinical profile of patients with obstructive jaundice: a surgeon's perspectives. Int Surg J. 2019;6(6):1876-80.
20. Attri A, Galhotra RD, Ahluwalia A, Saggar K. Obstructive jaundice: Its etiological spectrum and radiological evaluation by magnetic resonance cholangiopancreatography. Med J Dr. DY Patil University. 2016;9(4):443-50.
21. Shukla S, Kharat PR, Kumar K. Clinicopathological study on patients presenting with obstructive jaundice. Int Surg J. 2018;5(2):705-10.
22. 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;4(2):743-6.
23. Van Wagensveld BA, Coene PP, Van Gulik TM, Rauws EA, Obertop H, Gouma DJ. Outcome of palliative biliary and gastric bypass surgery for pancreatic head carcinoma in 126 patients. Br J Surg. 1997;84(10):1402-6.
24. Bekele Z, Yifru A. Obstructive jaundice in adult Ethiopians in a referral hospital. Ethiop Med J. 2000;38(4):267-75.
25. Syed N, Mohammad SA, Umair UI, Shafiq UR. Etiological spectrum of obstructive jaundice. Med Channel. 2010;16:299-301.
26. Khurram M, Durrani AA, Hasan Z, Butt Au, Ashfaq S. Endoscopic retrograde cholangiopancreatographic evaluation of patients with obstructive jaundice. J Coll Physicians Surg Pak. 2003;13(6):325-8.
27. Aziz M, Ahmad N. Incidence of malignant Obstructive Jaundice-a study of hundred patients at Nishtar Hospital Multan. Annals of King Edward Medical University. 2004;10(1).
28. Ahmad F, Khan AF, Ahmad A, Cheema KM. Extrahepatic Biliary Obstruction: A study of Aetiological Factors in A Teaching Hospital. Ann King Edward Med University. 1997;3(1-2):6-8.

29. Munir K, Bari V, Yaqoob J, Khan DB, Usman MU. The role of magnetic resonance cholangiopancreatography (MRCP) in obstructive jaundice. J Pak Med Asso. 2004;54(3):128.

Cite this article as: Murshid MY, Al-Hazmi AT, Ansari FA. Exploring the causes of obstructive jaundice: a single-centre retrospective analysis. Int Surg J 2024;11:561-6.