ABSTRACT: BACKGROUND AND AIM: Obstructive jaundice is nowadays usually referred to gastroenterology department and therefore, it is important to identify the common causes and relevant investigations to find out the cause. With this objective we conducted a study at Mahatma Gandhi Hospital, Jaipur to find out the etiology and epidemiological profile of patients presenting with obstructive jaundice to our department. PATIENTS AND METHODS: 50 patients of obstructive jaundice were evaluated thoroughly for etiology, epidemiological profile and radiological evaluation. RESULTS: Malignancy was more common in males while benign causes predominated in females. Carcinoma head of pancreas was most common cause of obstructive jaundice followed by choledocholithiasis. CONCLUSION: Malignant obstructive jaundice is more common as compared to benign obstructive jaundice and malignant causes are more frequent in males as compared to females. Where benign causes predominate. Ultrasound should be the first diagnostic test to be performed and in selected cases CT and MRCP should be performed. KEYWORDS: Obstructive Jaundice, Etiology.

INTRODUCTION: Obstructive jaundice is defined as jaundice due to extra or intrahepatic biliary obstruction. The etiology of obstructive jaundice may be benign or malignant. \cite{1,2,3} Symptoms of obstructive jaundice include pale stools, pain abdomen, fever and pruritus. USG abdomen, CT and MRCP are diagnostic tools for obstructive jaundice and ERCP is therapeutic. \cite{4,5,6} Each new mode of investigation is suitable for a specific situation and, therefore, it is important to identify the common cause of obstructive jaundice in a community and to find out which of the many tests available are most useful for detecting them. \cite{7,8,9} With this objective we conducted a study at Mahatma Gandhi Hospital, Jaipur to find out the etiology and epidemiological profile of obstructive jaundice patients.

PATIENTS AND METHODS: Study was conducted in Department of Gastroenterology, Mahatma Gandhi Hospital, Jaipur for a two year period ranging from 1 April 2013 to 1 April 2015. Patients in Gastroenterology OPD who presented with obstructive jaundice were selected for the study. A thorough clinical history and epidemiological profile of patients were recorded including age, sex, and other demographic characteristics and all patients were subjected to routine biochemical investigations and USG abdomen to confirm the diagnosis. CT abdomen was done in selected cases to find out the level of obstruction and respectability in cases of malignant biliary obstruction. ERCP was done in selected cases for both therapeutic and palliative purposes.

RESULTS: Out of 50 patients who were evaluated 30(60\%) were male and 20(40\%) were female. The mean age of the study population was 45 years (Range 8–87 years). Malignant obstructive jaundice was seen in 32(64\%) patients while 18(36\%) had benign aetiology.
Carcinoma head of pancreas was the most common aetiology and was seen in 16(32%) cases followed by carcinoma gallbladder, seen in 9(18%) cases. Choledocholithiasis was the most common benign aetiology seen in 15(30%). Other causes included periampullary carcinoma, cholangiocarcinoma, pancreatitis, benign CBD stricture and others. (Table-1) Malignant causes of obstructive jaundice predominated in males (72%), whereas in females benign causes were predominant (58%). Specific clinical features included cholangitis in 20(40%), biliary colic in 27(54%), palpable gall bladder in 20(40%), fever in 18(36%), pruritus in 30(60%) weight loss in 30(60%), hepatomegaly in 25(50%) and clay stools in 25(50%) patients. Serum alkaline phosphatase was raised in 45(90%) patients. Serum bilirubin levels were significantly higher in malignant obstruction as compared to benign obstruction. No patients with benign cause of obstructive jaundice had a serum bilirubin above 15mg/dl while 60% of malignant obstructive jaundice patients had serum bilirubin levels above 15mg/dl. Abdominal ultrasound was able to diagnose dilatation of biliary system (intra or extrahepatic) in 46(92%) cases. CT scan was performed, and was able to delineate level of obstruction and cause of obstruction in 48(96%) and 44(88%) cases respectively. MRCP was performed in total of 15 cases and correctly identified level and cause of obstruction in (95%) cases including choledocholithiasis, choledochal cysts, periampullary & hilar mass and CBD stricture.

ERCP was done in total of 15 cases and was able to delineate the level and cause of obstruction in all cases including malignant ductal and hilar cholangiocarcinoma, periampullary carcinoma and choledocholithiasis.

**DISCUSSION:** This prospective study in a defined population revealed the aetiological spectrum, clinical features and utility of imaging in obstructive jaundice in our setting over a 24months period, the jaundice being proved by clinical evaluation, laboratory and radiological investigations. A striking finding in the present study was that 64% of patients had malignant lesions and only 36% had benign lesions. Only a limited outcome is expected in malignant cases, irrespective of the aggressiveness of the treatment. By the time carcinoma of the head of pancreas presents with obstructive jaundice, it is too advanced for radical surgery. In this study, malignant obstructive jaundice was found more commonly amongst the males than females while females had more of benign obstructive jaundice which was statistically significant (p<0.05). Carcinoma of gallbladder was the commonest malignancy in females most likely related to higher incidence of chronic cholelithiasis and dietary factors.

The mean age of the patients with the benign and malignant aetiology of obstructive jaundice was 32 years and 48 years respectively. Most of the patients with the benign jaundice were between 22– 40 years of age while malignant causes were more common in the older patients and were maximally seen between 45–82 years of age.

Regarding the various malignant causes diagnosed carcinoma head of pancreas was the commonest (32%) followed by the carcinoma gall bladder (18%), periampullary carcinoma (8%) and cholangiocarcinoma (6%). Choledocholithiasis (30%) was the most common among benign causes of obstructive jaundice with CBD stricture, pancreatitis and choledochal cyst accounting for rest of the cases (6%). Weight loss and pruritus were more frequent (80%) in malignant biliary obstruction as compared to (40%) benign obstruction. Right hyochondriac pain was more frequent (65%) in benign causes as compared to malignant causes (35%). Fever was more common in benign (40%) as compared to malignant causes (20%).
Hepatomegaly and palpable gall bladder were more frequently found in malignant (60%) as compared to benign causes (25%). Amongst the radiological investigations the diagnostic accuracy of ultrasound in defining the level of obstruction was 90% as compared to 95%, 96% and 100% for CT scan, MRCP and ERCP, respectively.

**CONCLUSION:** Malignant obstructive jaundice is more common as compared to benign obstructive jaundice and malignant causes are more frequent in males as compared to females where benign causes predominate. Ultrasound should be the first diagnostic test to be done and in selected cases CT and MRCP should be performed. ERCP should be reserved for therapeutic intervention only.16,17 Malignant lesions are far advanced when presented with obstructive jaundice and radical treatment is not possible in the majority.18

| Aetiology             | Total Cases | Male | Female |
|-----------------------|-------------|------|--------|
| Malignant             | 32          | 23   | 9      |
| CA Head Pancreas      | 16          | 14   | 1      |
| CA Gall bladder       | 9           | 4    | 6      |
| Periampullary CA      | 4           | 3    | 1      |
| Cholangio CA          | 3           | 2    | 1      |
| **Benign**            | **18**      | **7**| **11** |
| Choledocholithiasis   | 15          | 5    | 10     |
| Pancreatitis          | 1           | 1    | 0      |
| Benign CBD stricture  | 1           | 1    | 0      |
| Choledochal cyst      | 1           | 0    | 1      |
| **Total cases**       | **50**      | **30**| **20** |

*Table 1: Incidence of various causes of obstructive jaundice*

**REFERENCES:**

1. Roche SP, Kobos R. Jaundice in the Adult Patient Am Fam Physician. 2004 Jan 15; 69(2):299-304.
2. Beers MH, Berkow R. Hepatic and biliary disorders. In: Beers MH, Berkow R, eds. The Merck Manual of Diagnosis and Therapy, 17th ed. Whitehouse Station, NJ: Merck & Co; 1999.
3. Qin LX, Tang ZY. Hepatocellular carcinoma with obstructive jaundice: diagnosis, treatment and prognosis. World J Gastroenterol 2003 Mar 15; 9(3):385-391.
4. Johnston DE. Special considerations in interpreting liver function tests. Am Fam Physician. 1999; 59:2223-30.
5. Martin DF, Laasch HU. The biliary tract. In: Grainger RG, Allison D eds. Grainger & Allison’s Diagnostic Radiology – A textbook of medical imaging, 4th ed. Churchill Livingstone, Harcourt publishers limited, London: 2001.
6. Geier A, Gartung C, Dietrich CG, Lammert F, Wasmuth HE, Matern S [Diagnosis of cholestatic disorders]. Med Klin (Munich). 2003 Sep 15; 98(9):499-509. [Article in German] PMID: 14551707
ORIGINAL ARTICLE

7. Yamakawa T, Honda H. [Image diagnostics for carcinoma of the biliary tract]. Gan to Kagaku Ryoho. 1991 Jul; 18(8):1258-63. [Article in Japanese] PMID: 2069395 EUS.
8. Acalovschi M. Cholangiocarcinoma: risk factors, diagnosis and management. Rom J Intern Med 2004; 42:41-58.
9. Siddique K, Ali Q, Mirza S, Jamil A, Ehsan A, Latif S, Malik AZ. Evaluation of the aetiological spectrum of obstructive jaundice. J Ayub Med Coll Abbottabad. 2008 Oct-Dec; 20(4):62-6.
10. Moghimi M, Marashi SA, Salehian MT, S heikhvatan M. Obstructive jaundice in Iran: factors affecting early outcome. Hepatobiliary Pancreat Dis Int 2008; 7: 515-519.
11. Cheema KM, Ahmad F, Gondal SH. Evaluation of etiological incidence and diagnostic modalities in obstructive jaundice. Pak Postgrad Med J 2001; 1 2:160-4.
12. Huang JQ, Bao XJ, Lu XH. [The common causes and differential diagnosis of malignant jaundice]. Zhonghua Nei Ke Za Zhi. 1993 Jun; 32(6):400-4. (Article in Chinese) PMID: 8269774.
13. Huis M, Stulhofer M, Szerda F, Vukić T, Bubnjar J. [Obstruction icterus-our experience]. Acta Med Croatica. 2006;60(1):71-6. (Article in Croatian) PMID: 16802577.
14. Aziz M, Ahmad N, Fa izullah. Incidence of malignant obstructive jaundice-A study of hundred patients at Nishtar Hospital Multan. Ann KE Med Coll 2004; 10:71-3.
15. Ahmed A, Cheung RC, Keeffe EB. Management of gallstones and their complications. Am Fam Physician 2000; 61:1673-1680, 1687-1688.
16. Russell R.C.G. The Gall Bladder and bile duct. In: Russell R.C.G, Williams N.S, Bulstrode C.J.K. Bailey & Love’ short practice of Surgery. 24th ed. London: Arnold publishers, 2004; p.1094-5, 1103-6.
17. Admassie D, H/Yesus A, Denke A. Validity of ultrasonography in diagnosing obstructive jaundice. East Afr Med J 2005; 82:379-381.
18. Pasanen PA, Partanen K, Pikkarainen P, Alhava E, Pirinen A, Janatuinen E.Diagnostic accuracy of ultrasound, computed tomography, and endoscopic retrograde cholangiopancreatography in the detection of obstructive jaundice. Scand J Gastroenterol. 1991 Nov; 26(11):1157-64.

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