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Original Research Article

Clinicopathological study on patients presenting with obstructive jaundice

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ABSTRACT

Background: Obstructive jaundice is frequently encountered surgical disease in the practice. This study is aimed to analyse age and sex distribution and incidence of malignant or benign causes in patients presented with obstructive jaundice. Author thoroughly documented various clinical presentations in these patients, evaluated them for stage of disease and appropriate management modality available for that particular stage.
Methods: This is observational study carried out in Department of General Surgery, Hamidia hospital Bhopal on 100 patients over period of 18 months from January 2016 to July 2017.
Results: Obstructive jaundice is more prevalent in 5th and 6th decade of life and male to female ratio of 2:3. Abdominal pain (97%) and jaundice (81%) are two common presentations. Malignancy (68%) tends to be more common than benign disease (32%) and among malignancies periampullary carcinoma and advanced GB carcinoma occurs with equal frequency of 32 cases. 46% patients of malignant aetiology presented in stage IV disease. Curative resection for periampullary tumours by whipples procedure was possible in 14% patients. Operative palliation by triple bypass was done in 11% and others were managed by appropriate another palliative modality. Adeno-carcinoma is most common histopathological variant. Choledocholithiasis (28%) is most common benign aetiology and was managed successfully by choledocholithotomy and T-tube insertion.
Conclusions: Awareness of common presenting symptoms of obstructive jaundice should be done so that the patient present early for diagnosis and curative surgery and thereby prolonged survival rate. Palliative procedures are commoner than curative resection due to late presentation.

Keywords: Choledocholithiasis, FNAC, Obstructive jaundice

INTRODUCTION

Jaundice and Icterus, is a yellowish discoloration of tissue resulting from the deposition of bilirubin. Tissue deposition of bilirubin occurs only in the presence of serum hyperbilirubinemia.[1] The degree of serum bilirubin elevation can be estimated by physical examination slight increase in bilirubin level are detected by examining sclera, which has affinity for bilirubin due to high elastin content. The presence of sclera icterus indicates a serum bilirubin level of at least 3mg/dl. As serum bilirubin levels rise, the skin will eventually become yellow or even green if the process is long standing, the green color is produced by oxidation of bilirubin. The differential diagnosis for yellowish discoloration of skin includes carotenoderma use of drug like quinacrine, and excessive exposure to phenols. Another sensitive indicator to increased serum bilirubin is darkening of urine which is due to renal excretion of conjugated bilirubin. Bilirubinuria indicates an elevation of direct serum bilirubin.

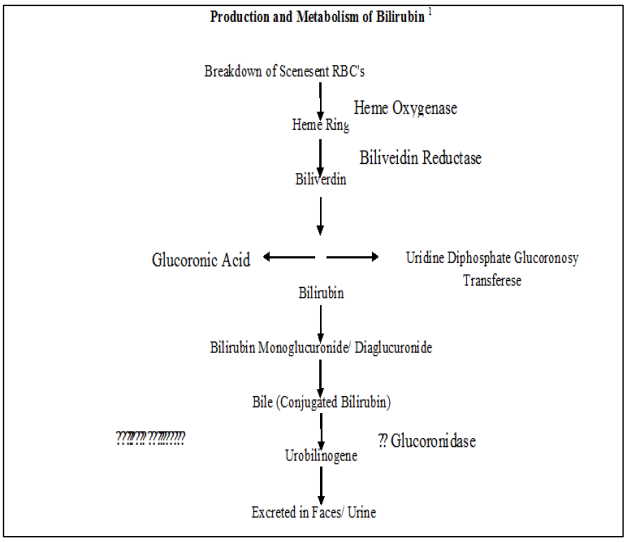

Figure 1: Production and metabolism of bilirubin.

Bilirubin formed in RE Cells is virtually insoluble in water due to tight internal hydrogen binding between the water-soluble moieties of bilirubin. Transportation of bilirubin in blood requires its solubilisation which is accompanied by reversible non-covalent binding of bilirubin to albumin.

Measurements of serum bilirubin

The term direct and indirect bilirubin's are based on the original Van den Bergh reaction. This assay is still used in most laboratories to determine serum bilirubin levels.

The direct fraction is that which reacts with diazotized sulfanilic acid in absence of an accelerator substance such as alcohol. Direct fraction indicates Conjugated bilirubin in serum. Total serum bilirubin is amount that reacts after addition of alcohol. Indirect bilirubin is a difference between total and direct fraction with Van den Bergh method normal serum bilirubin is less than 1mg/dl in >95% of population. Up to 30% of total may be direct reacting fraction.

Cholestatic conditions

When liver tests suggest cholestatic disorder then it is important to determine whether it is intra or extra hepatic cholestasis. Ultrasound is inexpensive, radiation free investigation to detect dilatation of intra and extrahepatic biliary with high degree of accuracy. Absence of biliary dilatation suggests intrahepatic cholestasis, while presence indicates extrahepatic cholestasis.

Although ultrasound indicate extrahepatic cholestasis, it rarely identifies the site of cause of obstruction. Distal common bile duct is particularly difficult to visualize on ultrasonography. Appropriate next test includes CT Scan Abdomen, MRCP, ERCP and EUS.

Causes of extrahepatic cholestatic can be split into malignant and benign. Malignant causes include gall bladder, pancreatic, ampullary and distal CBD cholangiocarcinoma. Hilar lymphadenopathy due to metastases may cause obstruction of extra hepatic cholestasis. Extra hepatic cholestasis while considering benign aetiology. The hepatobiliary system drains waste products from the liver into the duodenum and helps digestion through the controlled release of bile.

Confluence of hepato-biliary system at common hepatic duct makes the whole system vulnerable for obstruction when this common channel gets obstructed at anywhere in its path.2

This might be due to blocked bile duct caused by stones or tumour in lumen of bile duct or extra-luminal tumour which compress over it and block the channel of drainage where bile duct meets the duodenum.

METHODS

This is observational study done in Department of General Surgery, Hamidia Hospital Bhopal on 100 patients over period of 18 months from January 2016 to July 2017.

Data will be collected from patients who are admitted in surgical wards of Hamidia Hospital Bhopal, with a provisional diagnosis of obstructive jaundice. The Performa of each patient is filled during their hospital stay and updated daily to include investigations done and treatment offered to patients.

Inclusion criteria

- Patient with clinically apparent lump or icterus
- Patients with serum bilirubin level more than 2.5mg/dl
- Age group 14 years and above

Exclusion criteria

- Patients with medical jaundice
- Pregnant patients
- Patients less than 14 years

RESULTS

Periampullary carcinoma (32%) and advanced gall bladder malignancy (32%) are two common causes of obstructive jaundice and occurred with equal frequency in present study.

Malignancy (68%) tends to be more common than benign disease (32%) as cause of obstructive jaundice.

77% of patients are of age more than 40 years at presentation with obstructive jaundice and age is considered as important risk factor for most of the

malignancies. This correlates with the previous table 2 and figure 2 showing malignancy is more common than benign aetiology in present study.

Table 1: Etiology of obstructive jaundice.

	No. of cases
Periampullary carcinoma	
1) CA head of pancreas	22
2) CA distal CBD	04
3) CA ampulla of vatar	02
4) Deodnal ca near ampulla	04
Advances stage CA GB	32
Choledocolithiasis	28
Perihilar cholangio CA	04
Post- OP biliary structure	01
Choledocal cyst	03

Table 2: Malignancy verses benign diseases in obstructive jaundice.

Disease	Percentage
Malignancy	68%
Benign disease	32%

Table 3: Age distribution.

Age group	No. of cases
20-29	02
30-39	21
40-49	33
50-59	23
60-69	17
70-80	04
Total	100

Table 4: Sex distribution.

Sex	Percentage
Male	39
Female	61

Females (61%) are more prone to develops obstructive jaundice than male patients (39%).

Table 5: Distribution of symptoms and signs.

Symptoms and signs	No. of cases
Abdominal pain	97
Jaundice	81
Itching	47
Lump in abdomen	34
Loss of appetite	31
Fever	15
Vomiting	13
Ascities	07

Pain in abdomen and Jaundice are two most common presentations of patients with obstructive jaundice (Table 5).

Table 6: Stage of disease at presentation.

Stage	No. of cases
Stage I	01
Stage II	12
Stage III	22
Stage IV	33

Most of the patient presented to us are in advanced stage of disease with 33 out of 68 in Stage IV and 22 out of 68 in stage III disease (Table 6).

Table 7: Histopathological variants.

	No. of cases	% Age
Adenocarcinoma (NOS)	59	96.72%
Well differentiated	14	
Moderately differentiated.	26	
Poorly differentiated.	19	
Papillary adenocarcinoma	01	1.64%
Mucinous adenocarcinoma	01	1.64%
Squamous cell adenocarcinoma	00	00
Total	61	

Adenocarcinoma is most common histological variant of pathology in obstructive jaundice.

Table 8: Management modalities.

Management	No. of patients	% of patients
Whipples procedure	10	10
Triple bypass	08	08
PTBD	28	28
ERCP guided stenting	14	14
Simple/extended cholecystectomy	04	04
CBD exp+t-tube	29	29
Hepaticojejunostomy	07	07

DISCUSSION

Jaundice is a challenging problem for patients, more so when patients are ignorant of the on-going severe underlying disease. Specific symptoms will not occur in early stage of the disease. They will occur after the disease becomes locally advanced or involving adjacent vital structures. While comparing the other studies done elsewhere, the observation in present study too implies that the overall incidence of obstructive jaundice was more in females compared to males. The mean age of incidence of surgical jaundice is 48.5yrs in present study.

Comparing with Agal S et al of Mumbai who studied 62 cases of malignant aetiology and Kannan M et al of Chennai who studied 455 cases of both benign and malignant aetiology there is more or less equal age incidence in present study.

Evaluation of obstructive jaundice is common but challenging radiological problem. The aim of the imaging is to diagnose biliary obstruction by identifying dilatation of intra and extra-hepatic biliary channels to delineate the level of obstruction. Ultrasonography is widely available, non-invasive and radiation free imaging modality. It is the initial modality for the detection of obstruction in the biliary tree. Ultrasound was performed in almost all patients in present study. It showed dilatation of intrahepatic biliary radicles in 82% of patients. However, USG is limited by fact that it is operator dependent and pancreas can be obscured by overlaying bowel gas. Multi-detector CT with IV contrast, performed by acquiring sub millimetre axial section images in the pancreatic and portal venous phase is preferred and probably single most useful diagnostic and staging modality.[3] Chest and pelvis should be included in scanned area for staging. Many studies proved that 70-85% of tumour deemed resectable by CT scan be resected at surgery.[4] Evaluation by CT scan should include documentation of tumour, its location, size, its relation (abutment/encasement) with vessels (SMA, SMV, Portal vein, Hepatic artery) and evidence of dissemination (liver, peritoneal or omental metastasis, ascities) which aid in surgical planning.

Choledocholithiasis is most common benign cause of obstructive jaundice. Choledocholithiasis may be primary or secondary and dectected commonly on transabdominal ultrasound.[5] USG abdomen with LFT was able to diagnose most of the CBD stones preoperatively. Though intraoperative cholangiogram is gold standard for diagnosis of CBD stones, they can be diagnosed preoperatively with ultrasound, ERCP, MRCP.[6] Among these patients CBD exploration and T-tube insertion was most commonly done procedure in present study compared to other studies like in Benjamin and Popper, where bilioenteric anastomosis is also considered as option. 100% bile duct clearance was yielded when author carried out cholangiography postoperatively. There is no postoperative mortality in patients with choledocholithiasis, but some studies had shown increased age, nonelective admission and specific comorbid conditions (alcohol abuse, diabetes, hypertension, obesity) increases risk of mortality in this condition.[7]

In present study, author did not perform any method of preoperative biliary drainage for any amount of bilirubin levels. This was mainly considered in patients with malignant causes of biliary obstruction since various studies have shown no difference in the survival benefits with this procedure. Most of the studies have demonstrated that only wound infections are increased in patients with periampullary cancers undergoing preoperative biliary decompression.[8,9] Largest series on this topic comes from the Johns Hopkins Hospital.[9] In their analysis of 567 patients, only risk of wound infection was increased in patient undergoing preoperative biliary decompression. Avoiding preoperative drainage will help surgeons by providing dilated biliary system for anastomosis with bowel. Pre-operative biliary drainage is recommended in patients with cholangitis, deranged renal function, poor nutritional status, significant comorbid illnesses requiring stabilization and in candidates for neoadjuvant chemotherapy. Author had 8 deaths in the follow up and in those under evaluation. These patients were mainly in their advanced stage of their disease and the underlying pathology was mostly advanced carcinoma CBD, carcinoma of the gall-bladder, pancreatic and peri-ampullary malignancies.

The common malignant causes of obstructive jaundice in present study are periampullary carcinoma (32), advanced gall bladder carcinoma (32) both occurring with equal frequency. Both of these conditions are more common in females with overall male to female ratio in present study was 2:3. The malignant aetiology is more common in 5th and 6th decade of life and 56% of cases of obstructive jaundice fall in this 20 years age interval.

Palpable gall bladder more commonly indicates malignant aetiology. USG followed by CECT scan of abdomen and if required MRCP/ERCP are the investigations done to evaluate cause in these patients. Patients with palpable gall bladder were mostly inoperable when malignant aetiology is suspected on imaging studies and these patients are subjected to palliative treatment. Percutaneous biliary stenting is associated with lesser morbidity than surgical biliary bypass and is therefore indicated in all unrespectable malignancies for palliation of jaundice before chemotherapy. Perihilar Cholangiocarcinoma which is present in 4 patients out of 100 cases studied. Three of them were managed by cholecystectomy and Roux-en-Y hepaticojejunostomy and one patient with Bismuth type IV hilar cholangiocarcinoma was managed by Right side biliary stenting. Because one of the prospective, randomized controlled trial with Hilar cholangiocarcinoma unilateral biliary drainage was found to provide adequate biliary drainage; while patients randomized to receive bilateral biliary drainage had higher complications (cholangitis) against no detectable benefit.[10] All of these patients with both conditions (carcinoma gall bladder and cholangiocarcinoma) were subjected to gemcitabine-cisplatin combination chemotherapy which is considered current standard treatment as per ABC-02 trail.[11,12]

Most of the malignant cases presented in late stages(47% in stage IV) and underwent bypass procedures or one of the palliative procedures more than resection for malignancy, curative resection (whipples procedure) was

done in 10 patients of periampullary carcinoma. Review of pancreaticoduodenectomy specimens from high volume centers in western world reveals that 40-60% are adenocarcinoma of head of pancreas, 10-20% are adenocarcinoma of ampulla of Vater, 10% are distal common bile duct adenocarcinoma, and 5-10 % are duodenal adenocarcinoma. As these data represent resected specimen and respectability of nonpancreatic periampullary malignancy is much higher, it is likely that pancreas cancer is site of origin in 90% of periampullary cancers.[13,14] Similar is true for present study which reveals 20% adenocarcinoma head of pancreas, 20% adenocarcinoma of ampulla of Vater, 30% distal common bile duct adenocarcinoma and 30% duodenal adenocarcinoma out of 10 resected specimens of whipples procedure.

Eight patients of malignant cause of obstructive with locally advanced disease were treated by palliative triple bypass surgery.

In this study 97 % patients complained of abdominal pain and Intensity of pain in present study is measured on Numerical Rating Scale for pain to measure efficacy of various modalities of pain palliation. Numerical rating scale is uni-dimensional measure of pain intensity in adults.[15,16]. The scale is segmented numerical version of Visual Analogue Scale in which respondent select whole number (0-10 integers) that best reflect intensity of her or his pain.[17] Common format of scale is horizontal line or bar.

Morbidity patterns of wound infection is 10%, delayed gastric emptying is 6%. Median hospital stay for palliative procedures was 12 days. Mortality rate following Whipple's procedure was 10% in present study. In one series of 650 consecutive pancreaticoduodenectomies, the mortality was 1.4% with complication rate of 41%.[18]

A study conducted by Gupta AK et al and article was published on profile and pattern on obstructive jaundice cases from tertiary care teaching hospital of Uttar Pradesh in 2016 showed statistics like-malignant cases 63.89% (vs 68%), benign cases 36.11% (vs 32%), more than 50% cases were in 55-75years age group (vs 50% more than 50years), among the malignant causes carcinoma head of pancreas 60.87% (vs 32%) is most common cause of obstructive jaundice, pain in abdomen 75% (vs97%) and loss of appetite 77.8% (vs 31%) were two most common symptoms.[19]

Another prospective study on aetiology and management of obstructive jaundice due to extra-hepatic biliary obstruction carried out during November 2013 to December 2015 at Govt. Stanley Medical College by Kuberan K et al had following statistics female 62% (vs 61%) and male 38% (vs 39%), malignancy 62% (vs 68%) and benign 38% (vs 32%), among malignancy single most common cause is carcinoma head of pancreas 18% (vs 32%) and among benign causes choledocholithiasis is most common cause 28% (vs 28%), 55% cases are more than 50 yrs age (vs 50%), procedures performed were triple bypass 30% (vs 8%), Whipples procedure 20% (vs. 10%), PTBD 6% (vs 28%), ERCP guided stenting 16% (vs 14%), CBD exploration and t-tube insertion 8% (vs 29%), Hipatico-jejunostomy 4% (vs. 7%).[20]

One more study titled Etiological spectrum and treatment outcome of obstructive jaundice at university hospital Tanzania; A diagnostic and therapeutic challenge, carried out by Chalya PL et al and published in May 2011 had following statistics, of the total 116 patients of obstructive jaundice 43.1% (vs. 39%) were male and 56.9% (vs 61%) were females. Aetiology of obstructive jaundice was benign in 41.4% cases (vs. 32%) and malignant in 58.6% (vs 68%). Choledocholithiasis is commonest cause among benign group 62.5% and among malignant causes carcinoma head of pancreas contribute to 64.7%.

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