Epidemiology of Malignant Extra-Hepatic Biliary Tract Obstruction Detected

Omed H.K Abdulwahab

ABSTRACT:

BACKGROUND:

One of the important causes of obstructive jaundice is malignant tumours.

OBJECTIVE:

The current study was undertaken to describe the epidemiology of malignant extra-hepatic biliary tract obstruction in Sulaimaniyah, Kurdistan Region, Iraq.

Patients & Methods: The study was undertaken at Kurdistan centre for gastroenterology & hepatology in Sulaimaniyah city. Patients attending the centre during the period from 1st January 2008 to 1st January 2013 and diagnosed as having a malignancy using endoscopic retrograde cholangiopancreatography were included in the study. A total of 259 patients were found to have such a malignancy and therefore included.

RESULTS:

The mean age of patients was 63.5 years, the male to female ratio was 1:3 and the most common cause of malignant extra-hepatic biliary tract obstruction was cholangiocarcinoma 47.5%, followed by ampullary and peiampullary carcinoma 26.6%. In males, 37.7% of cancers were cholangiocarcinoma, 30.8% ampullary and periampullary carcinoma, & 26% pancreatic carcinoma, versus 60.2%, 21.2%, & 15% in females respectively (P= 004). Most cancers occurred between 50-79 years of age.

CONCLUSION:

The causes of malignant extra-hepatic biliary obstruction in order of frequency were cholangiocarcinoma, ampullary and periampullary carcinoma, pancreatic carcinoma & carcinoma of the gallbladder.

KEY WORDS: malignant biliary obstruction, ERCP, cholangiocarcinoma,

INTRODUCTION:

Malignant obstructive jaundice can be caused by cholangiocarcinoma, gallbladder carcinoma, metastatic lymphadenopathy and pancreatic carcinoma. Malignancies of the biliary tract include cholangiocarcinoma, gallbladder cancers and carcinoma of the ampulla of Vater.

Most of the cases are inoperable at diagnosis and are treated with palliative intent. Relieving the obstruction and normalizing the serum bilirubin level is usually the first step in this endeavor. Cholangiopancreatography (ERCP) and stenting is the preferred method for relieving the obstruction (1,2). Due to their slow growing nature, non-specific and late symptomatology, these malignancies are often diagnosed in advanced stages with poor prognosis. Apart from incidental discovery of gall bladder carcinoma upon cholecystectomy, early stage biliary tract cancers are now detected with computed tomography (CT) and magnetic resonance imaging (MRI) with magnetic resonance cholangiopancreatography (MRCP). Accurate characterization and staging of these indolent cancers will determine outcome as majority of the patients are inoperable at the time of presentation(2). Ultrasound is useful for initial evaluation of the biliary tract and gallbladder masses and in determining the next suitable modality for further evaluation. Multimodality imaging plays an integral role in the management of the biliary tract malignancies. The imaging techniques most useful are MRI with MRCP, endoscopic retrograde cholangiopancreatography (ERCP), endoscopic ultrasound (EUS) and positron emission tomography (PET). In bile duct pathology and especially in patients with jaundice, transabdominal sonography (TUS) is the first choice exploration following medical history and clinical examination. TUS offers rapid

*Lecturer; School of Medicine, Faculty of Medical sciences, University of Sulaimaniyah-Sulaimaniyah- Kurditan Region.

information which allows in most cases the differentiation between extrahepatic and intrahepatic cholestasis. The use of the new techniques (Doppler, tissue harmonic, contrast agents, 3D examination) improves significantly the image quality and facilitates the etiological diagnosis in extrahepatic malignant cholestasis.(3) The association between EUS, helicoidal CT, ERCP or MRCP is often necessary for identifying the cause of jaundice, for local and systemic evaluation, for indicating the surgical intervention and choosing the right therapeutic method. Obstructive jaundice which is caused by bile duct obstruction can be clinically and biochemically indistinguishable from cholestatic jaundice caused by hepatocellular disease. The management of both these conditions being radically different, the principle task of the radiologist is to differentiate between hepatocellular and cholestatic jaundice, using available imaging modality and help in further management. With the availability of non invasive modality like computed tomography and magnetic resonance imaging (MRI), it is possible to diagnose obstructive jaundice early and accurately without any patient discomfort (4). Accuracy of MRCP is comparable with that of ERCP. Regardless of modality, a lengthy segment of extrahepatic bile duct stricture with irregular margin and asymmetric narrowing suggests cholangiocarcinoma, and a short segment with regular margin and symmetric narrowing suggests benign cause(5,6).

AIM OF THE STUDY:

The aim of this study is to find out the causes of malignant extra-hepatic biliary tract obstruction in relation to age and gender during therapeutic endoscopic retrograde cholangipancreatography (ERCP).

PATIENTS AND METHODS:

This study was done in Kurdistan centre for gastroenterology & hepatology (KCGH)– Sulaimaniyah-Kurdistan Region-Iraq, in the period from 1st January 2008- 1st January 2013. The number of the patients who were included in the study was 259 patients. who underwent therapeutic endoscopic retrograde cholangiopancreaticography (ERCP). The cases were diagnosed after full evaluation by detailed history, physical examination, laboratory tests & imaging studies including: TUS, MRCP, EUS & finally ERCP when the non-invasive imaging studies indicated that a therapeutic endoscopic procedure is indicated through ERCP. Tissue biopsies and or brush cytology were obtained for diagnosis when imaging studies were inconclusive in giving a definite diagnosis.

RESULTS:

There were 259 cases of biliary obstruction due to malignancies including 146 males and 113 females (male to female ratio of 1.3). The mean age of the patients was 63.5 years (SD=13.7years). When classified them by 10 year age groups, there were most cases in 50-70 years age group (51% of all patients) followed by 70-79 years age group with 24% of the patients. There were fewer patients in younger age group below 40 years, 5% (table 1). The most common cancer was cholangiocarcinoma with 47.5% of cases followed by ampullary and periampullary carcinoma with 26.6% of cases, and pancreatic carcinoma 21.3%, Table 2 shows the distribution of different types of cancer by gender. In males, 37.7% of cancers were cholangiocarcinoma, 30.8% were ampullary & periampullary carcinoma, and 26% were pancreatic cancer vs. 60.2%, 21.2% and 15% in females respectively. These differences were statistically significant (Chi-squared=13.1, P=0.004) in gender. When the mean age of males and females were compared there were no significant differences. The mean age of males was 64.7 years and the mean age of females was 62 years with a mean difference of 2.7 years (95% confidence interval 0.5 to –5.9 years, p=0.1).Table 3 shows distribution of the types of cancer by age groups, there was no significant statistical differences, for example in all age groups except the extreme old age (80 years and above) the most common cancer was cholangiocarcinoma. In all age groups the least common type of tumour was gall bladder carcinoma.

Table 1:Main characteristics of the sample

Characteristics	Number	Percent
Total	259	100
Gender		
Male	146	56.4
Female	113	43.6
Age group		
28-39 years	12	4.6
40-49 years	26	10.0
50-59 years	58	22.4
60-69 years	74	28.6
70-79 years	61	23.6
80 year and above	28	10.8
Type of tumour		
Cholangiocarcinoma	123	47.5
Ampullary & peiampullary carcinoma	69	26.6
Carcinoma of pancreas	55	21.3
Gall bladder carcinoma	12	4.6
Mean age in years (SD)	63.5(13.7)	

Table 2: Association between gender and type of cancer

Gender	Cholangiocarcinoma	Ampullary & Periampullary Carcinoma	Pancreatic Carcinoma	Gall bladder Carcinoma
	Number (%)	Number (%)	Number (%)	Number (%)
Male	55 (37.7)	45 (30.8)	38 (26.0)	8 (5.5)
Female	68 (60.2)	24 (21.2)	17 (15.1)	4 (3.5)
Total	123 (47.5)	69 (26.6)	55 (21.3)	12 (4.6)
Chi-squared=13.1, df=3, P=0.004				

Table 3: Association between age group and type of cancer

Age group	Cholangio-carcinoma	Ampullarry & Periampullary Carcinoma	Carcinoma of Pancreas	Gall bladder Carcinoma
	Number (%)	Number (%)	Number (%)	Number (%)
28-39 years	6 (50%)	2 (16.7)	4 (33.3)	0 (0.0)
40-49 years	16 (61.5)	5 (19.2)	5 (19.2)	0 (0.0)
50-59 years	26 (44.8)	13 (22.4)	16 (27.6)	3 (5.2)
60-69 years	36 (48.7)	24 (32.4)	12 (16.2)	2 (2.7)
70-79 years	29 (47.5)	20 (32.8)	7 (11.5)	5 (8.2)
80 year and above	10 (35.7)	5 (17.9)	11 (39.3)	2 (7.1)
Total	123 (47.5)	69 (26.6)	55 (21.3)	12 (4.6)
Chi-squared= 20.3, df=15, P = 0.15				

DISCUSSION:

This study examined the causes of malignant extra-hepatic biliary obstruction discovered during the indicated therapeutic ERCP in KCGH-Sulaimaniyah, Kurdistan Region- Iraq. As shown in Table 1, the causes in order of frequency were cholangiocarcinoma, periampullary &ampullary cancer, pancreatic cancer & gall bladder cancer. Most of the patients were elderly between 50 & 79 years of age. One study found that in most cases of malignant biliary obstruction, the cause

was pancreatic adenocarcinoma or cholangiocacinoma, other causes included metastatic disease & gallbladder carcinoma(7). Another review of 90 stent deployments with malignant biliary stricture, the causes were pancreatic carcinoma55.3%; Cholangiocarcinoma 11.8%; Ampullary carcinoma 6.6%; Metastatic carcinoma 18.4% and other causes 7.9%(8). Further studies are needed to detect any increase in the incidence of the risk factors for cholangiocarcinoma. Epidemiological surveys have shown that the median age of diagnosis approximates 70 years (9). A variety of malignant diseases may metastasize to and around the biliary tree, resulting in obstruction. These may lead to biliary obstruction either intrinsically or extrinsically (10), but in this cohort of patients we didn't have any of those cases probably due to the relatively small number of patients. As shown in table 2 the association between gender and type of cancer indicates that only choalangiocarcinoma has female predominance while other cancers had male predominance. According to other studies, Cholangiocarcinoma has a slight male predominance with the exception of the female Hispanic population in whom intra-hepatic cholangiocarcinoma rates are increased compared with the male population(11). Singal et al found that the male to female ratio for cholangiocarcinoma is 1:2.5 in their 60 and 70 years(12). This finding needs consideration since choledocholithiasis which is a known predisposing factor for cholangiocarcinoma is more in females(13), Carcinoma of the gall bladder also shows female predominance in the published literature (14).This is in contrast with this study which shows male predominance, may be due to the small sample size which only included 12 cases of gall bladder carcinoma, or the predisposing cause may be a male predominant condition like primary sclerosing cholangitis (15), Both peri-ampullary & pancreatic cancer have male predominance in the published literature (16,17) consistent with our findings.

Table number 3 shows association between age group and type of cancer. It indicates clearly that the four types of cancer detected as a cause of malignant extra-hepatic biliary obstruction occur in old ages between 50 & 79 years of age. This finding is going with the published literature about the epidemiology of these cancers stating that the mean age of these patients were 64 (18-23).

CONCLUSION:

The most common causes of malignant extra-hepatic biliary tract obstruction in order of frequency were cholangiocarcinoma, ampullary &periampullary carcinoma and pancreatic carcinoma, which occurred mostly between 50 to 79 years of age.

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