

A Study of Aetiological Pattern of Space Occupying Lesion in the Liver in a District Hospital

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Due to its anatomical position and dual blood supply, the liver is affected by various types of space occupying lesions (SOL). This is an observational descriptive study designed to identify different types of space occupying lesions in the liver, their epidemiology as well as to identify the risk groups, done in Medicine department of 250 bed district hospital, Kishoreganj from January 2013 to December 2013. Patients having space occupying lesion in the liver admitted in different medicine wards were selected. The patients were selected at random and irrespective of age and sex. Full blood count, RBS, serum creatinine and liver function test (serum bilirubin, SGPT, Alkaline phosphatase) was done in all patients. HBsAg and Anti-HCV was done in suspected cases of liver carcinoma. X-ray chest was done in liver carcinoma to see the metastatic site (from lungs to liver or liver to lungs). Liver aspiration was done in cases of liver abscess and microscopy was done to see the trophozoite of *Entamoeba histolytica*, Gram and AFB staining and culture was done. Out of 63 patients having space occupying lesions in the liver 38, 23 and 2 patients had liver abscess, liver tumours and liver cysts, respectively. Out of 38 liver abscess patients 26, 11 and 1 patients had amoebic liver abscess, pyogenic liver abscess and helminthic liver abscess, respectively. Among 23 patients with liver tumours 17, 5 and 1 had metastatic carcinoma, hepatocellular carcinoma and haemangioma, respectively. Between 2 patients of liver cysts 1 had hydatid cyst and 1 had simple cyst (polycystic liver). Study revealed liver abscess was the main aetiology of space occupying lesion in the liver.

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Key words: Space occupying lesion, liver, hepatocellular carcinoma, liver abscess

Introduction

Due to its anatomical position and dual blood supply, the liver is affected by various types of space occupying lesions (SOL).¹ The SOL affecting the liver can be classified as infectious and non-infectious. The infectious diseases are mainly liver abscesses and cystic lesions (Hydatid cyst). Liver abscesses are mainly two types - pyogenic and amoebic. The non-infectious

SOL are tumours and cysts of the liver. Tumours are benign and malignant. Malignant tumours may be primary or metastatic (secondary). Among the primary malignant tumours hepatocellular carcinoma (HCC) is the most common. Metastatic carcinoma of the liver is about 20 times more common than primary carcinoma of the liver.² A lot of advancement has been achieved in the field of HCC. Pockets of high,

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intermediate and low risk foci have been identified over the world. It ranks as the fifth most common cancer in the world with an estimated 437000 new cases in 1990⁵. The highest prevalence areas are eastern Asia (including Japan and China) and sub-saharan Africa. Geographic areas of lowest incidence are northern Europe, Australia and New Zealand and the Caucasian populations in the North and Latin America.⁶ It is 4 times more common in men than in women and usually arises in cirrhotic liver.⁷ Much has been learnt about its probable aetiology, particularly its consanguineous relationship with hepatitis B virus (HBV) infection. The liver is the organ most subject to the development of abscess. About 26% of all abdominal abscesses are visceral and liver abscesses made up 13% of all abscesses.⁸ Over the last 30 years there has been marked change in the aetiology of the pyogenic liver abscess (PLA).³ Abscess secondary to biliary diseases particularly malignant have continued to increase. Entamoeba is a frequent commensal of homosexual men.⁴ The SOL are very much ambiguous in clinical presentation particularly HCC which procreates a lot of paraneoplastic syndrome mimicking any disease. Sometimes its clinical manifestations masquerades under the garb of cirrhotic features evading detection/diagnosis by vigilant physicians even. The rapid advances in medical technology in the past two decades have greatly increased the ease and accuracy of diagnosing hepatic tumours.¹ Early diagnosis and surgical resection of HCC and appropriate antibiotic for liver abscess has played a great role to prolong the survival of patients of HCC and to cure the patients of liver abscess respectively. Preventive measures are also running in full swing to nip the diseases in the bud or to reduce the incidence at least. Bangladesh lies in endemic focus among the South East Asian countries where HCC is the second commonest cancer killer. Liver abscesses are also very common

in tropical countries like Bangladesh. Other SOL are not uncommon but the magnitude of the problem in Bangladesh is not well understood, nor there is sufficient information how diversely these patients present to the physicians. This observational study was designed to enlighten how we encounter SOL in the liver clinically and biochemically. This study will also allow us to search common aetiological pattern of SOL and compare the amoebic and pyogenic liver abscess.

Methods

This observational descriptive study was conducted in 250 Bed district Hospital, Kishoreganj during the period between January 2013 to December 2013. A total of 63 patients of space occupying lesions (SOL) in the liver admitted into medicine wards were studied. The patients were selected at random and irrespective of age and sex. Initially 75 patients suspected for SOL in the liver were taken for the study and 63 of these patients who had necessary investigations and ultrasonographically confirm SOL in the liver were the key point for inclusion criteria of the study population. A detailed history was taken from all patients including major complaints, mode of onset of the present illness and the duration of illness. Particular emphasis was given on the past history of jaundice, taking of alcohol, oral contraceptive pills, any other drug, smoking or exposure to any chemicals and inhabitation of the patient, whether rural or urban. Then a meticulous physical examination was done with particularly looking for stigmata of chronic liver disease and defining hepatomegaly. Full blood count including platelet count was done in all cases to see the haematological changes associated with SOL in the liver. RBS, serum creatinine and urine R/E were done to see any associated disease like diabetes and renal impairment. Liver function tests like serum bilirubin, SGPT and alkaline phosphatase were done in all cases. HBsAg and Anti-HCV were done in

suspected cases of liver carcinoma. X-ray chest was done in suspected cases of liver carcinoma to see metastasis to or from the lungs. Ultrasonogram of the whole abdomen especially the hepatobiliary system was done in every cases to see the lesion in the liver, number of lesion, their size, echopattern and in some cases to locate the lesion for FNAC and aspiration. Fine needle aspiration cytology (FNAC) was in cases of tumour in the liver and was taken as the confirmatory evidence of HCC and metastatic tumour in the liver. Aspiration of liver abscess with microscopic examination of wet film, gram and AFB staining of aspirate and culture and sensitivity were done. Aspirate samples were collected in the ward under strict aseptic precautions. USG guidance was taken in some cases and the marking of maximum thickness of abscess were done. Fresh aspirate was immediately studied for trophozoite of *E. histolytica*. The colour of aspirate was noted in naked eye and sent for microscopic examinations and culture and sensitivity. Socio-economic condition of the study population was ascertained by their monthly income. The study population was classified into different income groups. Patients or guardians having monthly income <TK. 3,000, 3,001-10,000 and >10,000 were classified as low income group, middle income group and upper income group respectively.

Results

The study was conducted in Medicine department of 250 bed district hospital, Kishoreganj from January 2013 to December 2013. A total 63 patients were enrolled in our study. The findings of history, physical examinations and laboratory investigations were recorded in stereotyped proforma. Results were compiled, analysed and entered into tables, charts and diagrams. The results were compared and contrasted with those of contemporary studies taken overseas and with

those taken in our country. The mean age was 48.2 years. The most common age group affected was 31-40 years comprising of 20 (32%)

Table 1: Age distribution of all types of SOL in the liver (n=63)

Age in year	No. of patients	%	Mean Age
≤30	14	22	
31-40	20	32	
41-50	14	22	48.2
51-60	10	16	
61-70	05	08	
Total	63	100	

The most common age group affected was 31-40 years comprising of 20 (32%) patients. The immediate succeeding age group was 41-50 years comprising 14(22%) patients. So, more than half of the patients were between the age 3rd and 4th decade. The mean age was 48.2 years

Table II: Types of SOL (n=63)

Types of SOL	No. of patients	%
Liver Abscess	38	60
Liver Tumour	23	37
Liver Cyst	02	03

The most common type of SOL in the liver was liver abscess which was 38 (60%) and primary or metastatic carcinoma was second most common type which was 23 (37%) in number.

Table III: Types of liver abscess (n=38)

Types of liver abscess	No. of patients	%
ALA	26	68
PLA	11	29
Helminthic liver abscess	01	03

The most common type of liver abscess was ALA which was 26 (68%) and PLA was second most common type which was 11 (29%) in number.

Table IV: Types of tumours of the liver (n=23)

Types of tumour	No. of patients	%
Metastatic carcinoma of the liver	17	74
HCC	05	22
Haemangioma	01	04

The most common type of liver tumour was metastatic carcinoma of the liver which was 17 (74%) and primary carcinoma of the liver was second most common type was 5 (22%) in number. Two patients had liver cysts and one patient had hydatid cyst and one patient had simple cyst (Polycystic liver)

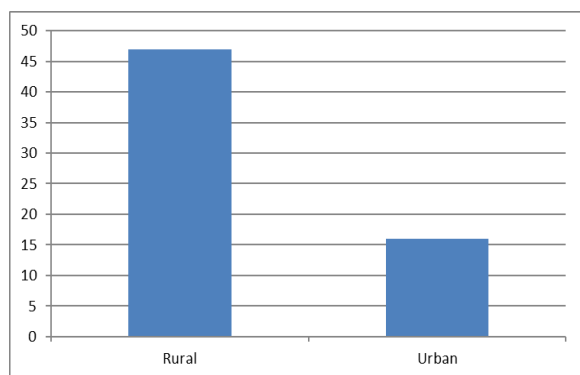


Figure 1. Sex distribution of the patients of SOL in the liver (n=63)

Among the 63 patients of SOL in the liver 48 (76%) were male and 15 (24%) were female and male to female ratio was 3.2:1.

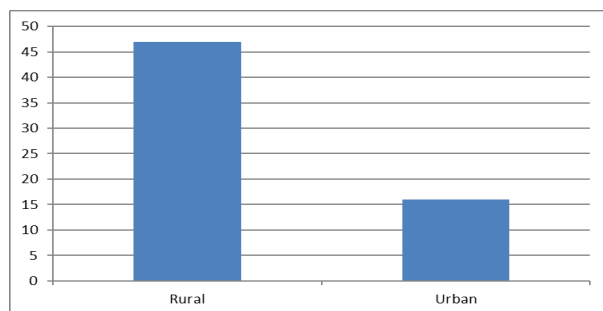


Figure 2. Distribution of patients according to Urban and Rural Inhabitation (n=63)

In all types of SOL in the liver most of the patients were from rural area comprising 47 (75%) patients and 16 (25%) from urban area.

Table V: Age and sex distribution of liver tumours (n=23)

Age in year	Male	Female	Total
≤30	2	1	3(13)
31-40	2	2	4(17)
41-50	3	3	6(26)
51-60	5	1	6(26)
61-70	3	1	4(17)
Total	15(65)	8(35)	23(100)

*Figure in the parenthesis indicate percentage

The most common age group was 41-50 years and 51-60 years comprising of 6 (26%) patients in each group. More than 50% of neoplasm of the liver is between 4th and 5th decade of life.

Table VI: Age and sex distribution of patients of liver abscess (n=38)

Age in year	Male	Female	Total
≤30	9	2	11(29)
31-40	15	1	16(42)
41-50	5	2	7(18)
51-60	3	0	3(8)
61-70	1	0	1(3)
Total	33(87)	5(13)	38(100)

*Figure in the parenthesis indicate Percentage

The most age group of liver abscess was 31-40 years comprising of 16 (42%) patients. The immediate succeeding age group was 30 years and below comprising of 11 (29%) patients. Majority (71%) of the liver abscess developed within the age 40 years.

Table VII: Age and sex distribution of ALA and PLA

Age in year	ALA (n=26)			PLA (n=11)		
	Male	Female	Total	Male	Female	Total
≤30	8	1	9(35)	1	1	2(18)
31-40	10	1	11(42)	5	0	5(46)
41-50	2	1	3(12)	2	1	3(27)
51-60	2	0	2(8)	1	0	1(9)
61-70	1	0	1(4)	0	0	0(0)
Total	23(88)	3(12)	26(100)	9(82)	29(18)	11(100)

In cases of ALA most common age group was 31-40 years comprising of 11 (42%) patients. The immediate succeeding age group was 30 years and below comprising of 9 (35%) patients and male to female ratio was 7.6. In case of PLA the most common age group was 31-40 years comprising of 5 (46%) patients and succeeding age group was 41-50 years comprising of 3 (27%) patients and male to female ratio was 4.5.

Table VIII: Socioeconomic condition of liver abscess patients (n=37)

Name of liver abscess	Socio economic condition		
	Lower class	Middle class	Upper class
ALA (n=26)	14 (54)	12 (46)	0 (0)
PLA (n=11)	6 (55)	5 (45)	0 (0)
Total	20	17	0

*Figure in the parenthesis indicate percentage

In case of both types of liver abscess lower class is most commonly affected which comprises 20 (54%) patients and middle class the second group which comprises 17 (46%) and no patients of upper class are affected

Discussion

There is no epidemiological data for SOL in the liver in Bangladesh. The disease is stated to be prevalent in South East Asian region.⁶ Bangladesh closely resembles other countries of this region with respect to climatic, geographical conditions and social customs. Over crowding, illiteracy, poverty, unhygienic water supply and faulty food storage systems

are always there in Bangladesh which might suggest that the country is harbouring some of the aetiological factors of SOL in the liver. In our study we got 3 major groups of SOL in the liver. Firstly liver abscesses which were of 3 types - Amoebic liver abscess (ALA), Pyogenic liver abscess (PLA) and Helminthic (Ascaris) liver abscess. Secondly liver tumours which include metastatic carcinoma of the liver, HCC and hemangioma of the liver. Thirdly cystic disease of the liver which include hydatid cyst and polycystic liver disease. In our study out of 63 patients 37 (59%) patients were of liver abscess. Differentiation of ALA and PLA was done on the evidence of naked eye examination and culture of the pus and microscopic finding of the liver aspirate. In the 26 ALA cases trophozoite of *E. histolytica* were detected in 7 (27%) cases. Sarkar SK⁹ got 25% cases were positive for *E. histolytica* trophozoite. Out of 26 ALA cases 11 (42.3%) were in the age group 31-40 years followed by 9 (34.6%) cases in the age group 21-30 years. Males were 23 (88.4%) and female were 3 (11.6%), and male to female ratio 7.6. Sarkar SK⁹ showed most (26%) were in the age group 21-30 years. Blanco QF et al.¹⁰ stated the male to female ratio 5. Among 26 ALA patients 14 (54%) were of lower socioeconomic group and 12 (46%) were of middle class. Hai AA et al.¹¹ stated that the majority of ALA patients are of lower socioeconomic group. Jalan et al.¹² stated amoebic infection is more common in lower socioeconomic group in India, South Africa and Mexico which corresponds to my study. In this study fever

and upper abdominal pain were present in all (100%) cases. Nausea was present in 18 (69%) cases, vomiting in 12 (46%) cases, diarrhea in 5 (19%) cases and weight loss in 10 (38%) cases. Blanco QF et al.¹⁰ stated fever was most common (71.79%) clinical finding. Karki P. et al.¹³ also stated fever as the most common (88%) clinical feature. In 11 cases pus culture were positive ie. there were growth of one organism. In our study all 37 aspirate were examined with gram staining, 11 (29.7%) showed organism and all these samples were positive for aerobic culture. Our findings were strongly correlated with Barnes et al.¹⁴ in USA who stated that presence of bacteria in gram staining or culture might be indicator of PLA. Out of 11 PLA cases 5 (45.5%) cases belonged to the age group 31-40 years and 3 (27.3%) cases of 41-50 years. Petri et al.¹⁵ stated patients with PLA usually belongs to older age groups around 50 years. In my study 9 patients were male and 2 were female and male to female ratio 4.5. Blanco QF et al.¹⁰ stated male to female ratio to be 2.3. In this study in 11 cases the culture of pus yielded growth of organism. In 6 (54.5%) cases organism was *E. coli* and in 4 (36.5%) cases the organism was coagulase negative *Staphylococcus* and in 1 (9%) case the organism was *Klebsiella*. This study is in asgreement with Sarkar SK⁹ in Bangladesh, Moore et al.¹⁶ in UK and Mc Donald¹⁷ in Australia. In contrast Yeoh et al.¹⁸ in Singapore reported *Klebsiella* were the commonest organism. In our study we got 5 cases of HCC. Most of the patients between 40 to 60 years of age, the youngest female patient was 27 years and the oldest one 60 years. Al Mamun MA¹⁹ showed that age spectrum of the patient ranged 28-75 years and peaked 30-50 years of age. Study in India Habibullah et al.²⁰ showed that the age range was 40-80 years with peak incidence in 5th decade. Kew MC²¹ showed in sub-Saharan Africa a high incidence area of HCC, the tumour developed in earlier age and peak

incidence in 3rd to 5th decade of life. All the studies in our country show a concordance of evidence that majority of patients in Bangladesh presented between 40-60 years of age. In our study 17 cases of metastatic carcinoma of the liver were found. Among them 12 were male and 5 were female. The most age group affected was 41-50 years, lowest age of the patient was 20 years and highest age was 70 years. Only in 5 cases primary site of the carcinoma were found. Out of 5 cases 3 from bronchogenic carcinoma, 1 from gallbladder 1 from ovary. The liver is the most frequent site of blood born metastasis, irrespective of whether the primary is drained by systemic or portal vein.⁶ Exact previous study over metastatic carcinoma of the liver is not available in Bangladesh. Further large scale multicentered study will help to find out the demographic profile of SOL in the liver.

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