



A study on clinical profile of parasitic hepatic cyst compare with other hepatic cyst in Bangladesh

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Abstract

Introduction: Cystic lesion of the liver is not an uncommon condition. These conditions are increasingly being diagnosed because of improved diagnostic facilities. Hepatic cysts may be non-parasitic and parasitic. The non-parasitic cysts may be simple, polycystic liver disease and neoplastic. The incidence of simple liver cyst is approximately 5% of the general population, and most of them are asymptomatic, diagnosed incidentally during imaging study for other abdominal conditions or at laparotomy. These cysts may again produce symptoms due to pressure on adjacent organs. The parasitic cyst caused by the larval stage of *Teniaechnococcus*. Echinococcosis is wide-spread, and it is not confined to sheep-raising countries. Increasing migration, high mobility of troops and a growing incidence of world travel make hydatidosis a global problem of increasing importance.

In Bangladesh the exact incidence of cystic lesions of the liver is not known, but these conditions are increasingly being diagnosed and treated

Materials & Methods: A prospective study was carried out from September, 2000 to May, 2005 in the Dept. of Surgery, Bangabandhu Sheikh Mujib Medical University (BSMMU, Dhaka and Islamic Bank Central Hospital (IBCHK), Dhaka. The study was carried out on patients of cystic disease of the liver who underwent operative treatment in 136 patients This study revealed the cystic lesions of the liver are not uncommon. Because of improved diagnostic technologies a good number of cases are now seen. This study was mainly done to find out the common causes. In several countries, parasitic aetiology is common because of obvious reasons.

Results: Of the total of 124 patients evaluated 92 patients were female and 32 patients male. Therefore, female-male ratio was 3:1. The incidence of cystic lesion of the liver in different age groups showed mean age 36.7±9.8 years range 17-61 years. Majority (42.8%) of the patients in the age group 30-39 years and 2nd highest (30.2%) in the age of group 40-49 years. Among hepatic cysts, Neoplastic 8(6.46%), Parasitic 62(50%) Simple 40(32.25%), Polycystic 14(11.29%). The neoplastic cysts were cystic degeneration in malignant tumor.

Conclusion: This study proved that parasitic (hydatid) disease is the common cause of hepatic cysts in our country. Improved diagnostic technologies were also helped by the surgical procedures e.g. hepatic resection, excision of the cyst, deroofting etc. followed by histopathological confirmation. These were possible, because of special interest in hepatobiliary surgery, use of CUSA and above all.

Keywords: Parasitic, Hepatic Cyst, Commonest.

Introduction

Cystic lesion of the liver is not an uncommon condition. These conditions are increasingly being diagnosed because of improved diagnostic facilities.

Hepatic cysts may be non-parasitic and parasitic. The non-parasitic cysts may be simple, polycystic liver disease and neoplastic. The incidence of simple liver cyst is approximately 5% of the general population, and most of them are asymptomatic, diagnosed incidentally during imaging study for other abdominal conditions or at laparotomy. These cysts may again produce symptoms due to pressure on adjacent organs.^[1,2]

The parasitic cyst caused by the larval stage of *Teniaechnococcus*. Echinococcosis is widespread, and it is not confined to sheep-raising countries. Increasing migration, high mobility of troops and a growing incidence of world travel make hydatidosis a global problem of increasing importance.^[3]

In Bangladesh the exact incidence of cystic lesions of the liver is not known, but these conditions are increasingly being diagnosed and treated because of availability of modern diagnostic facilities and development of expertise. The simple hepatic cyst may have a complicated course. The standard surgical management has been to operate when patients are symptomatic or when cysts cause complications, such as rupture, hemorrhage, infection, portal hypertension, obstructive jaundice, torsion and malignant degeneration.^[4]

Similarly hepatic hydatid disease may give rise to obstructive jaundice, suppuration and anaphylactic shock due to rupture-which is life threatening.^[5]

In a study of Mayo clinic by Hensen et al. in 1956 out of 77 cases; solitary 38, polycystic 29, traumatic 05, cystadenoma 05, and no parasitic cases. But the study of Sanfelippo, Beahrs and Weiland 1973 carried out in the same centre revealed out of 150 cystic lesions, there were solitary 82, polycystic 49, traumatic 03, inflammatory 03 and parasitic 13 cases. With these findings the study carried by Sanfelippo,

Beahrs and Weiland 1973 has pin pointed the problem of cystic lesion of parasitic origin, with a new dimension of thinking, and more number of scientific workers have involved them to find out more facts in this concern.^[6]

As we know, so far no such study was carried out till date in Bangladesh, so it has become the demand of time to know about the state of problem of parasitic disease of the liver in our population. Keeping this priority in mind, we have decided to carry on this scientific work to find out the causes of symptomatic cystic lesions of the liver.

Methodology

Study Type: A Prospective study method was followed to carry out the study.

Duration period: The study conducted during September, 2000 to May, 2005.

Study Place: This study was carried out in the department of General Surgery, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka and Islamic Bank Central Hospital (IBCHK), Dhaka

Sampling and sample size: Purposive sampling method was followed for the study. The study was carried out on 124 patients of cystic disease of the liver who underwent operative treatment

Inclusion and exclusion criteria

Evaluation of the patients was based on history of physical examination and investigations.

Inclusion Criteria

- Inclusion criteria were followed as per following characteristics:
- Variable ages, both sexes;
- Patients with cystic lesion of the liver undergoing operative treatment;

Exclusion Criteria

Exclusion criteria were followed as per following characteristics:

- Pregnant women, Patient requiring emergency surgery;
- Patient with hepatic abscess Regarding Ethical consideration

Ethical Consideration: The topic was accepted by the Ethical Committee of the Department of Surgery, BSMMU, Dhaka.

Results

Of the total of 124 patients evaluated 92 patients were female and 32 patients male. Therefore, female-male ratio was 3:1. The incidence of cystic lesion of the liver in different age groups showed mean age 36.7±9.8 years range 17-61 years. Majority (42.8%) of the patients in the age group 30-39 years and 2nd highest (30.2%) in the age of group 40-49 years. So the peak incidence was in 4th and 5th decades of life.

Table 1: Age of the patient

Age group	Percent (%)
30-39	42.8
40-49	30.2
50-69	27.0
Total	100

It was found that no statistically significant mean age difference was found between male and female patients (p>0.05). Among hepatic cysts Neoplastic 8(6.46%) Parasitic 62(50%) Simple 40(32.25%), Polycystic 14(11.29%). The neoplastic cysts were cystic degeneration in malignant tumor.

Table 2: Types of hepatic cyst

Hepatic cysts	Frequency	Percent (%)
Neoplastic	8	6.46%
Parasitic	62	50.00%
Simple	40	32.25%
Polycystic	14	11.29%
Total	124	100

In 62 case of parasitis and 62 cases of non parasitic patients symptoms of Abdominal pain 78.9 Vs 70.6, Nausea/vomiting 42.1 VS 17.6 Weight loss 31.6 VS 23.5 Fever 21 VS 4 Pruritus 21.1 VS 0, contact with dog 10.5 VS 0, Anaphylaxis 5.3 VS 0. Of the signs abdominal mass 31.6 VS 52.9, Jaundice 26.3 VS 11.8, Palpable liver 21.0 VS 5.9.

Table 3: Distribution of study patients by type of cysts and clinical presentations

Symptoms	Percent %
Abdominal pain	78.9Vs70.6
Nausea/vomiting	42.1VS 17.6
Weight loss	31.6 VS 23.5
Fever	21 VS 11.8
Pruritus	21.1 VS 0.0
Contact with dog	10.5VS 0.0
Anaphylaxis	5.3VS 0.0
Abdominal mass	31.6 VS 52.9
Jaundice	26.3 VS 11.8
Palpable liver	21.0 VS 5.9

Among Laboratory investigation findings Serum bilirubin pmol/L 24.7+17.2(12.00-57.00) VS16.118.5 (10.00-48.00) Alkaline phosphatase (IU/L)159.3+104.8(24.0-340.0) VS 99.5158.4(13.0-280.0 Alanine transaminase (IU/L) 39.6110.4(25-61) VS31.1110.5(25-60) Asparte transaminase (IU/L) 37.2+12.6(25.0 - 67.0) VS 31.217.0(25.0-55.0) p Value were 0.071NS ,0.045 0. 020s and 0.096NS.Total circular Eosinophil count /cu.mm 255.0+225.8 (35.0-590.0) VS94.4159.1 (45.0-260.0) Total WBC/cu mm blood 7552.612499.6 (5000.0-14000.0) VS 8123.513301.9(4500.0-14000.0). P values were 0.008S and 0.560NS

Table 4: Laboratory investigation findings

Symptoms	value	P Value
Serum bilirubin pmol/L	24.7+17.2(12.00-57.00)VS 16.118.5 (10.00-48.00)	
Alkaline phosphatase	(IU/L)159.3+104.8(24.0-340.0) VS 99.5158.4(13.0-280.00	
Alanine transaminase (IU/L)	39.6110.4(25-61) VS31.1110.5(25-60))	
Asparte transaminase	(IU/L)37.2+12.6(25.0 -67.0) VS 31.217.0(25.0-55.0)	0.071NS ,0.045 0. 020s and 0.096NS
Eosinophil count /cu.mm	255.0+225.8 (35.0-590.0) VS94.4159.1 (45.0-260.0)	
WBC/cu mm blood	7552.612499.6 (5000.0-14000.0) VS 8123.513301.9(4500.0-14000.0)	0.008S and 0.560NS
Total		

Note: (t' test S=Significant (p<0.05); NS=Not significant (p>0.05).

Table-5: Sensitivity and specificity analysis of CFT for hydatid disease

Test	Diagnosis		Total	P Value
	Positive	Negative		
Positive	56(68.29)	27(57.14)	73(64.5)	0.001s
Negative	24(29.26)	17(38.09)	41(32.3)	
Total	80(66.12)	44(33.87)	124(100.0)	

Sensitivity 70.0%

Specificity 60.0%

N.B. Figures in parenthesis indicate percentage p value reached from Fisher’s test S=Significant (p<0.05)

Table V shows the sensitivity and specificity analysis of complement fixation test (CFT) for hydatid disease. It was found that the sensitivity for CFT was 70.0% and for specificity was 60.0%.

Table-6: Sensitivity and specificity analysis of IHA for hydatid disease

Test	Diagnosis		Total	p value
	Positive	Negative		
Positive	56(70.0)	27(60.0)	73(64.5)	0.001s
Negative	24(30)	17(40.0)	41(32.3)	
Total	80(66.7)	44(33.3)	124(100.0)	

Sensitivity 92.9%

Specificity 73.7%

N.B. Figures in parenthesis indicate percentage p value reached from Fisher’s test S=Significant (p<0.05)

Table shows the sensitivity and specificity analysis of indirect hemagglutination (IHA) test for hydatid disease. It was found that the sensitivity for IHA test was 92.9% and for specificity was 73.7%.

Radiological findings of study patients by type of cyst: X-ray findings of Hepatic cyst in Parasitic VS Non-parasitic, Yes 36.8 VS 0(0.0), 19.4% and No 63.2 VS (100.0) 80.6%. The radiological findings of the study patients. Regarding calcification, among parasitic patients, 36.8% showed calcification in the cyst wall and 63.2% had no calcification, whereas among the non-parasitic cyst no patients had calcification in the cyst wall.

Table 7: Location of different type of cysts in lobes of liver

Hepatic Cyst			
Ultrasonography & CT scan	Parasitic	Non-parasitic	Total
Site of cyst/cysts			
Right Lobe	56(73.7)	50(82.4)	106(77.8)
Left lobe	6(15.8)	2(5.9)	8(11.1)
Both lobes	8(10.5)	2(11.8)	10(11.1)
Total	70(52.8)	54(47.2)	124(100.0)

Table-7 shows the location of cysts in the different lobes of liver. Among the parasitic cysts, highest percentage of cysts was found in right lobe and among the non-parasitic cysts, similar pattern was observed. Location of cysts does not have any relation with aetiology in this study.

Discussion

In the field of abdominal surgery liver cyst though not very common, but patient often presents with symptoms. It is necessary to establish the cause of liver cyst for proper management.

Since establishment in 1965 the then IPGM&R presently known as BSMMU, serves as a tertiary referral hospital in our country. As expert surgical teams are working in this hospital and availability of modern investigative and operative equipments like C.T. scan, Cavitron Ultrasonic Surgical Aspirator (CUSA) etc, more patients with hepatic cysts are being referred to this hospital.

In this study we started work to find out the causes of liver cysts, those who presented with symptoms.

This prospective study was carried out from September 2010 to May 2012 over a period of 24 months in Surgery Department of BSMMU, Dhaka.

Initially the study included 132 (sixty six) patient randomly irrespective of age and sex, but later on 8 (four) patients were diagnosed as liver abscess and were excluded from the study according to exclusion criteria. Finally the study continued with a 124 patients and was analyzed with regards to age, sex, clinical & laboratory parameters, serological findings, Ultrasonography and CT scan findings to identify the causes of hepatic cyst

in symptomatic patient presenting to Surgical Department of BSMMU.

Of the total of 124 patient's evaluated 92 patients were female and 32 patients male Therefore, female-male ratio was 3:1. The incidence of cystic lesion of the liver in different age groups showed mean age 36.7 ± 9.8 years range 17-61 years. Majority (42.8%) of the patients in the age group 30-39 years and 2nd highest (30.2%) in the age of group 40-49 years. So the peak incidence was in 4th and 5th decades of life.

As we probably am aware, so far no such examination was done till date in Bangladesh, so it has turned into the interest of time to comprehend what is the condition of issue of parasitic sickness of the liver in our populace. Remembering this need, we have chosen to bear on this logical work to discover the reasons for symptomatic cystic injuries of the liver.

It was found that no statistically significant mean age difference was found between male and female patients ($p > 0.05$). It was found that no statistically significant mean age difference was found between male and female patients ($p > 0.05$). Among hepatic cysts Neoplastic 8(6.46%) Parasitic 62(50%) Simple 40 (32.25%), Polycystic 14(11.29%). The neoplastic cysts were cystic degeneration in malignant tumor.

In parasitic (hydatid) hepatic cyst female-male ratio 2.1:1, indicates females were more sufferer which match with the sex distribution of the study done by Sayek, Yalin&Sanac (1989) but did not match with Sanfelippo, Beahrs &Weiland (1974).^[6]

It also found that the symptomatic hepatic hydatid cysts were common in 4th and 5th decades of life which almost match with the observation of Papadimitriou and Mandrekas, (1970).^[7]

In polycystic liver disease (33.3%) case was associated with polycystic kidney disease. Among the simple cyst one (8.33%) patient was associated with gallstone disease. Similar findings were observed by Sanchez et al. (1991).^[8]

Symptoms responsible for surgical exploration were varying depending on the nature of the cysts.

The clinical features of different type of cysts presenting to us were shown in result before. The common features for non-parasitic cysts were abdominal pain 70.58%, abdominal mass 52.79%, hepatomegaly 5.9%, nausea or vomiting 17%. These findings conform with the study of Sanchez et al. (1991), Litwin et al. (1987); but not with Sanfelippo, Beahrs & Weiland (1974).^[6]

In parasitic (hydatid) hepatic cysts presenting features found abdominal pain 78.9%, abdominal mass 31.6%, jaundice 26.3%, pruritis 21.05%. These were almost similar with the findings of Sanfelippo, Beahrs & Weiland (1974), Langer et al. (1983); but not with the findings of Meyers, W.C. (1991), In this study we found among the hepatic hydatid cyst 4 (10.5%) patients had pet dogs in their house. Similar finding was also cited by Meyers, W.C. (1991) in his study.^[9]

A statistically significant mean difference were found between parasitic and non-parasitic cyst in terms of Alkaline phosphatase (159.3 ± 104.8 vs 99.5 ± 58.4 IU/L), Alanine transaminase (39.6 ± 10.4 vs 31.1 ± 10.5 IXJ/L) and total circulating eosinophils count (255.0 ± 225 vs 94.4 ± 59.1 per mm of blood) ($P < 0.05$) indicating parasitic cysts had higher value than non- parasitic cysts. These findings were similar with Langer et al. (1984).²²

No statistically significant mean difference were found between parasitic & non-parasitic patients in terms of serum bilirubin (24.7 ± 17.2 vs 16.1 ± 8.5 pmol/L). Aspartate transminase (37.2 ± 12.6 vs 31.2 ± 7 IU/L) and total WBC count (7552.6 ± 2499.6 vs 8123.5 ± 3301.9 per cu mm blood) but which were raised in parasitic cysts findings match with Langer et al. (1984).^[10]

The sensitivity & specificity of CFT for hydatid disease was found 70% & 60% respectively and was statistically significant ($p < 0.05$). Which match with the finding of Langer et al. (1984); Chematai, Bowry & Ahmad (1981), but not with Cuschieri & Giles (1997) they found sensitivity 93%. The sensitivity & specificity of IHA test for hydatid disease was found 92.9% & 73.7% respectively and was statistically significant

($p < 0.05$). Which match with Chematai, Bowry & Ahmad (1981) but not with the finding of Langer et al. (1984), they found sensitivity 84%. Calcification in the wall of the parasitic cysts found in Plain X-ray abdomen in 7(36.8%) of the cases. This finding conformed with the study done by Milicevic (2000), but our finding does not conform with the finding of Langer et al. (1984).^[10]

Ultrasonography (USG) has become the screening test for the diagnosis of the space occupying lesions of the liver. It was done in all 124(100%) cases as initial investigation. CT Scan was done in selected cases, where USG could not delineate the nature and exact location of the cysts.

Non-parasitic cyst was solitary in 124(100%) patients. It was located in right lobe of the liver 50(82.4) and left lobe 2(5.9). Non-parasitic cyst was multiple in 2(11.8) cases and situated in the both lobes of the liver. Our findings consistent with the finding of Letwin et al. (1987).^[11]

Parasitic cyst were found in the right lobe 56(73.7), left lobe 6 (15.8%) and both lobes 8(10.5) patients. This findings consistent with Langer et al. (1984), but not with the finding of Witzleben, et al. (1996).^[12]

Russell, et al. (2000). Preoperative diagnosis was evaluated with the preoperative & histopathological findings and the final diagnosis was established in every cases. Our study shows that parasitic cysts 54 (47.2%) and non-parasitic cysts 70(50.8%). This indicates that parasitic (hydatid) disease is the common cause of symptomatic cysts of the liver.

Conclusion

This study proved that parasitic (hydatid) disease is the common cause of hepatic cysts in our country. Improved diagnostic technologies were also helped by the surgical procedures e.g. hepatic resection, excision of the cyst, deroofing etc. followed by histopathological confirmation. These were possible, because of special interest in hepatobiliary surgery, use of CUSA and above all To find out the alarming incidence of hydatid

disease in our environment needs extensive study in different institutes, is my humble submission.

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