

Study of clinical, etiological, and biochemical profile of patients with liver abscess: A prospective study

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ABSTRACT

Background: Liver abscess comprises 48% of all the visceral abscesses. Worldwide, approximately 40–50 million people are affected annually with abscesses. It is common in India with second highest incidence due to poor sanitation, overcrowding, and inadequate nutrition. **Objectives:** The objective of this study is to evaluate patient with liver abscess for etiology, clinical features, and biochemical abnormality. **Materials and Methods:** A total of 104 liver abscess patients diagnosed on the basis of ultrasonography were studied in the Department of Medicine, GR Medical College and JA Group of Hospital, Gwalior, from November 2009 to October 2011. All patients are subjected to detailed clinical examination and biochemical testing. On the basis of microbiological study, three groups were formed: Amoebic liver abscess (ALA) group ($n = 39$), pyogenic liver abscess (PLA) ($n = 28$) group and not aspirated Group ($n = 37$). **Results:** Most of the patients belong to ALA group (58.2%) with male preponderance (90.1% in ALA and 60.7% in PLA group) ($P = 0.0038$). Maximum number of patients of ALA were in <40 years of age group (92.3%) compared to PLA (17.8%) ($P = 0.003$). Most common comorbidity was cholelithiasis (23.52% in ALA and 37.71% in PLA), and common symptoms were fever (92.30% in ALA and 68.96% in PLA), hypotension (39.2% in PLA and 20.5% in ALA), icterus (42% in ALA and 46% in PLA), and right quadrant tenderness (65.6%). Raised alkaline phosphatases (66% in ALA and 75% in PLA) were the most common liver function test abnormality. **Conclusion:** PLA was more prevalent in patients with age >40 years, with comorbid condition such as diabetes or cholelithiasis or cholangitis with pulmonary finding, whereas ALA occurs in young male <40 years of age, male accompanied by a history of diarrhea and abdominal pain/tenderness. ALA can be managed without aspiration compared to PLA.

KEY WORDS: Bacterial Growth; Percutaneous Aspiration; Cholelithiasis; Alkaline Phosphatases


INTRODUCTION

Liver abscess involves the collection of purulent material in liver parenchyma due to bacterial, parasitic, fungal, or mixed infections. In Indian population, there is a high prevalence of liver abscess possibly due to poor sanitation, overcrowding, and

inadequate nutrition.^[1] Around the globe, about 40–50 million people are affected annually with liver abscesses.^[2]

Several studies from rural areas of Central and South America, India, and the tropical areas of Asia and Africa have found prevalence rate as high as 55%.^[3,4] Global incidence of pyogenic liver abscess (PLA) is around 1.1–2.3 per 100,000 person-years, and in the United States, the incidence is approximately 3.6 per 100,000 and has been rising.^[5]

Liver abscess can broadly be classified into amoebic liver abscess (ALA) and PLA. Majority of amoebic etiology is found in the developing countries and pyogenic in the developed countries. Both the abscesses share many clinical,

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laboratory, and imaging feature, but they exhibit a significant difference in epidemiology and treatment. Hence, the differentiation is essential for effective treatment.^[6]

Hence, the present study was conducted to evaluate patients with liver abscess for etiology, clinical features, and biochemical abnormality.

MATERIALS AND METHODS

A prospective study was done including 104 liver abscess patients at the Department of Medicine, GR Medical College and J A Group of Hospital, Gwalior, Madhya Pradesh, between November 2009 and October 2011.

All 104 patients of liver abscess included in the present study were diagnosed on the basis of ultrasonography. All patients were subjected to detailed clinical examination, biochemical testing, radiological assessment, optimal management, and outcome.

Of 104 patients, 67 gave consent for aspiration, and hence, the microbiological diagnosis was confirmed in these patients. On the basis of the microbiological study, three groups were formed: ALA group (n = 39), PLA (n = 28) group, and not aspirated group (n = 37).

Data were analyzed using the software IBM SPSS versus 20. Frequency distribution and cross tabulation were used to prepare Tables 1 and 2. Quantitative data were analyzed using Student’s t-test, and categorical data were analyzed using Pearson’s Chi-square test. Two-tailed P < 0.05 was considered as statistically significant.

RESULTS

In the present study, 39 (58.2%) cases were of ALA and 28 (41.8%) cases were of PLA. Males predominated over females in both the groups (90.1% in ALA and 60.7% in PLA group) (P = 0.0038).

Alcohol ingestion in male patient was attributed to an increased risk of liver abscess, i.e., ALA (74.3%) and PLA (58.8%) (P = 0.0038). On comparing clinical parameters between the groups, it was found that hypotension was most common with PLA (39.2%) compared to ALA patient (20.5%). Icterus was present in 43% of the total liver abscess patient, i.e., ALA (42%) and PLA (46%) (P > 0.05). Most common per abdomen finding in liver abscess patient was right quadrant tenderness (65.6%), followed by hepatomegaly (40%) and splenomegaly (19%). Most common liver function test abnormality was raised serum alkaline phosphatase (70%), 66% patient of ALA and 75% patient of PLA. No significant difference was obtained between ALA and PLA patients in the level of serum bilirubin, serum glutamic oxaloacetic transaminase (SGOT), serum glutamate pyruvate transaminase (SGPT), prothrombin time (PT), and serum albumin (P > 0.05).

DISCUSSION

Liver abscess is more common in tropical countries.^[1,7] The common etiological agents for liver abscess are *Entamoeba histolytica* (amoebic) and various bacteria (pyogenic). Majority of liver abscess cases from the developing country are of amoebic etiology.^[7]

Table 1: Comparing different parameters between both the groups

Parameter	ALA (n=39)		PLA (n=28)		Total (n=67)	P value
	M (n=34)	F (n=5)	M (n=17)	F (n=11)		
Age group (years)						
<20	2 (6.8)	0 (0)	0 (0)	0 (0)	2 (9.0)	0.003
21-40	29 (85.2)	5 (100)	2 (11.7)	3 (27.27)	37 (55.2)	
41-60	3 (7.7)	0 (0)	11 (64.7)	8 (72.7)	22 (32.8)	
>61	0 (0)	0 (0)	4 (23.5)	0 (0)	4 (6.1)	
Education status						
Illiterate	23 (67.6)	4 (80)	4 (23.5)	7 (63.63)	38 (56.7)	NS
HS	9 (26.4)	1 (20)	10 (58.8)	4 (36.36)	24 (27.5)	
G	2 (5.8)	0 (0)	2 (11.7)	0 (0)	4 (5.97)	
PG	0 (0)	0 (0)	1 (5.88)	0 (0)	1 (1.44)	
Occupation						
GS	2 (44.4)	0 (0)	5 (29.4)	0 (0)	7 (10.44)	0.0038
Laborer	19 (55.8)	0 (0)	8 (47.5)	0 (0)	27 (40.2)	
Farmer	11 (32.3)	0 (0)	3 (17.6)	0 (0)	14 (20.2)	
Other	4 (11.7)	5 (100)	1 (58.82)	11 (100)	21 (31.34)	

ALA: Amoebic liver abscess, PLA: Pyogenic liver abscess, M: Male, F: Female, HS: Higher secondary, GS: Government servant, NS: Not significant

Table 2: Comparing comorbidity and associated symptoms in both the groups

Parameter	ALA (n=39)		PLA (n=28)		Total (n=67)	P value
	M (n=34)	F (n=5)	M (n=34)	F (n=5)		
Comorbidity						
Cholelithiasis	8 (23.52)	0 (0)	5 (29.41)	5 (45.45)	19 (28.53)	
Cholangitis	1 (2.94)	0 (0)	4 (23.5)	3 (27.27)	8 (14.2)	
CLD	4 (11.76)	0 (0)	3 (17.64)	0 (0)	7 (11.8)	0.038
Diabetes mellitus	8 (23.5)	0 (0)	9 (52.54)	5 (45.45)	22 (32.8)	
HIV	4 (11.7)	0 (0)	1 (5.88)	0 (0)	5 (7.74)	
On ISD	6 (17.64)	0 (0)	1 (5.88)	0 (0)	7 (10.44)	
Symptoms						
Fever	31 (91.17)	5 (100)	13 (76.4)	7 (63.63)	56 (83.4)	
Abdominal pain	30 (88.23)	5 (100)	12 (70)	8 (72.72)	55 (82)	
Malaise	26 (76.47)	4 (80)	15 (88.23)	7 (63.63)	52 (77.7)	
Weight loss	19 (55.88)	3 (60)	5 (29.41)	4 (36.66)	31 (46.26)	0.031
Nausea/vomiting	23 (67.64)	3 (60)	9 (52.94)	8 (72.72)	43 (64.17)	
Diarrhea	11 (32.35)	2 (40)	1 (5.88)	0 (0)	14 (20.89)	
Cough	6 (17.64)	1 (20)	4 (23.52)	2 (18.18)	13 (19.4)	

Data are expressed as number of patients (percentage), ISD: Immuno-suppressant drug, CLD: Chronic liver disease. ALA: Amoebic liver abscess, PLA: Pyogenic liver abscess, M: Male, F: Female

Most of the patients in the present study with liver abscess were in middle age with patients in second–fourth decade accounting for 55.2% of the cases which is comparable to a study done by Giorgio *et al.*^[8] Siddiqui *et al.* reported that, in case of ALA, most common age group was 31–40 years, and in case of PLA, it was 41–50 years.^[6] In our study, there was a high incidence of liver abscess in males (77.61%) as was seen in another study by Huang *et al.* (96%).^[9] A similar study done by Choudhary and Choudhary also reported similar age group (30–60 years) in liver abscess patients with male preponderance (72%).^[10] Siddiqui *et al.* studied 50 liver abscesses cases and reported male preponderance (88%).^[6] In the present study, fever (83.4%) was the most common symptoms followed by pain in the abdomen (82%). Similarly, Choudhary and Choudhary reported pain in the abdomen (98%) and fever (94%) as the most common symptoms.^[10] Similar to the present study, Siddiqui *et al.* also showed that, among 50 patients, 92% of patients presented to the hospital with fever and 76% of patients presented with upper abdominal pain.^[6] Ghosh *et al.* reported in 99% and 94%, whereas various other studies quote it in the range of 62–94% and 67–87%, respectively.^[11–13] Most common abdominal finding in liver abscess patient in the present study was right quadrant tenderness (65.6%), followed by hepatomegaly (40%) and splenomegaly (19%). Choudhary and Choudhary also reported abdominal tenderness (98%) followed by hepatomegaly (50%), jaundice (23%), and right intercostal tenderness (61%) as the most common clinical signs.^[10] Almost similar to the present study, Seeto and Rockey reported that 60% of patients had either right upper quadrant tenderness or hepatomegaly.^[14] Jain *et al.* reported hepatomegaly in 80% of cases.^[15] Ghosh *et al.* reported it in

89% of cases which correlates with the present study, whereas Das *et al.* found it in only 40% of cases which is contrary to the present study.^[13,16] In our study, alcohol ingestion was the single most consistent etiological factor in 74.3% of ALA and in 58.8% of PLA male patients which is comparable to the study done by Mathur *et al.*^[17] (91.30% of male cases consumed alcohol). All these patients had a history of alcohol consumption for more than 1 year. Thus, this study found a strong association of alcohol and liver abscess. Siddiqui *et al.* also reported that 44% had a history of intake of indigenous alcohol.^[6] Jain *et al.* also reported alcohol consumption as a major risk factor in 58.4% of patients of ALA; however, only 14.2% of PLA cases were found alcoholic.^[15] Contrary to the present study, Islam *et al.* showed that indigenous alcohol has association with the development of PLA.^[18] Ghosh *et al.* had 72% of alcoholic patients in their study.^[13] Most common liver function test abnormality was raised serum alkaline phosphatase (70%) (66% in ALA group and 75% in PLA group). No significant difference was obtained between ALA and PLA patients in the level of serum bilirubin, SGOT, SGPT, PT, and serum albumin ($P > 0.05$). Siddiqui *et al.* reported that liver function tests were within normal limits in most of the cases. Only 8% of PLA and 20% of ALA cases showed mild rise of alkaline phosphates.^[6] Serum alkaline phosphatase was elevated in 96% of patients as reported by Jain *et al.* (Jain V 2017) with 95% and 100% frequency from ALA and PLA, respectively, which is in accordance with various previous studies.^[19–21] Jain *et al.* also reported that SGOT and SGPT were raised in 64% and 66% of patients, respectively, but in the present study, opposite results were found.^[15]

CONCLUSION

Observation in the present study revealed that patient older than 40 years with comorbid condition such as diabetes or cholelithiasis or cholangitis and have pulmonary finding was most likely to have PLA. ALA occurs in young male <40 year males accompanied by a history of diarrhea and abdominal pain/tenderness. ALA was most commonly prevalent and in most circumstance can be identified and managed without aspiration. It is very difficult to differentiate between amoebic and pyogenic abscess. The consistency of the results of our study, i.e. clinico-etiological profile of liver abscess with previous literature and studies suggests that a presumptive diagnosis based on the clinical features is reliable and diagnostic aspiration of all patients presenting with hepatic abscess is not required.

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