

ORIGINAL ARTICLE

A CROSS-SECTIONAL STUDY OF CLINICAL FEATURES AND MANAGEMENT OF LIVER ABSCESES IN A TERTIARY CARE HOSPITAL, AHMEDABAD, GUJARAT

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ABSTRACT

Introduction: Liver abscess is a common and major health problem in the lower socio-economic group. It can be managed with drugs, ultrasound guided needle aspiration and open surgical drainage.

Aim: The aim of the study was to assess the etiological & predisposing factors, variation in clinical presentation in liver abscesses, conservative management of small liver abscess, role of USG guided aspiration and percutaneous tube drainage and role of surgical intervention in liver abscess.

Methods: A cross-sectional study was conducted in a tertiary care hospital of Ahmedabad on 100 patients with liver abscess from 2006 to 2009. Information on socio-demographic, clinical, complications and management of the patients was collected on a pre-tested questionnaire after taking written informed consent of the patients. Data was entered and analysed in Excel.

Results: Amoebic liver abscess is more common in 30-40 age groups, while Pyogenic is more common in 50-60 age groups. Males are commonly found to be affected than females. Alcoholism and Diabetes mellitus are main predisposing factors in case of liver abscess. Most patients present with fever, abdominal pain and tenderness in right hypochondrium. Most common signs are tenderness in right hypochondrium and fever. Most common laboratory findings are hypoalbuminemia, leukocytosis and anemia. Ultrasound has been proven to be the most useful investigation. Nine out of 14 patients with Pyogenic Abscess & 4 out of 5 patients with Amoebic Abscess responded to medical therapy while adjunctive percutaneous aspiration (for abscesses smaller than 180cc on USG) was performed in 31 Amoebic & 33 Pyogenic patients. USG guided aspiration and laparotomy has the best outcome.

Conclusion: We conclude from the study that needle aspiration combined with antibiotics represent a successful therapeutic approach in the treatment of liver abscess. Open surgical drainage is usually reserved for complications like rupture in peritoneum.

Key words: Percutaneous Needle Aspiration; Amoebic liver abscess; Pyogenic liver abscess

INTRODUCTION

Hepatic or liver abscesses are infectious, space-occupying lesions in the liver; the two most common abscesses being pyogenic and amoebic. Pyogenic liver abscess (PLA) is a rare but potentially lethal condition, with a reported incidence of 20 per 1,00,000 hospital admissions in a western population.¹ Its severity depends on the source of the infection and the underlying condition of the patient. Amoebic liver abscesses (ALA) are common in tropical regions mainly where 'Entamoeba histolytica' is endemic and is more prevalent in individuals (mostly young males) with suppressed cell mediated immunity.² ALA is the most common extra intestinal site of infection but occurs in only less than 1% of E. histolytica infections.³ ALAs are 3 to 10 times more common in men.⁴ Patients commonly affected are be-

tween 20 to 40 years of age with residence in, recent travel to or emigration from an endemic region.

Liver abscess is an important clinical problem in tropical regions of the world and accounts for a high number of hospital admissions. It is usually an easily treatable condition with good clinical outcomes. There is however potential for morbidity and even mortality if proper and timely treatment is not provided. The standard treatment of liver abscess is the use of appropriate antibiotics and supportive care. Needle aspiration can be used as an additional mode of therapy. It is suggested that needle aspiration can improve response to antibiotic treatment, reduce hospital stay and the total cost of treatment. Although ultrasound guided needle aspiration is fairly safe, it is nonetheless an invasive procedure, and can be associated with the risk of bleeding. The present study was conducted to assess the etiologi-

cal & predisposing factors, variation in clinical presentation in liver abscesses, role of antibiotics (conservative management) in management of small liver abscess, role of USG guided aspiration and percutaneous tube drainage and role of surgical intervention in liver abscess.

MATERIALS AND METHODS

This cross-sectional study was conducted in the Department of General Surgery of BJ Medical College & Civil Hospital, Ahmedabad in the year 2006-09. A total of 100 patients diagnosed as liver abscess were included in the study. Patients were prospectively included in the study (as they attended the OPD) and the data collection was stopped once a sample size of 100 was achieved. All patients were explained in detail about the objectives of the study. The patients giving written informed consent to participate in the study were included in this research. The patients were interviewed with the help of a pre-tested questionnaire having information of their socio-demographic, clinical, management and treatment variables. The data was computerized in Excel and was analysed in the same software.

Diagnosis of liver abscess was based upon history, clinical examination and abdominal ultrasound findings. The following data was collected in all the patients who were diagnosed with uncomplicated liver abscess: demographic information, chief complaint, duration of fever or abdominal pain, associated illnesses, malignancy and history of biliary surgery or other procedures. Results of laboratory investigations and imaging studies done at the time of admission were recorded as were the clinical course of disease, modalities of treatments used and outcome of the patients. Patients with uncomplicated (non-ruptured) liver abscess were undergone to the following investigations:

Complete blood counts, imaging by ultrasound, blood culture and pus culture if the abscess was aspirated. Based upon the results of these investigations, patients with liver abscess were categorized into two groups according to the following criteria: (1) Amebic liver abscess with negative blood or pus culture. (2) Pyogenic liver abscess with or without positive blood and/or pus culture.

According to our usual practice, patients were started on standard treatment of liver abscess and if the size is less than 150cc, therapeutic percutaneous needle aspiration was carried out.

Needle aspiration was done under local anesthesia and ultrasound guidance. And the procedure was repeated in 3-4 days if optimal response was not obtained. Percutaneous catheter drainage was done in case of a large (more than 500 cc of pus collection on ultrasound) liver abscess. Antibiotics were continued for 10-14 days for Amoebic liver abscess 4-6 weeks for Pyogenic liver abscess. Surgery in form of laparotomy was done in complicated cases e.g. rupture of liver abscess in peritoneal cavity.

The study had the following pre-decided criteria for cured patients: decrease/omitted abdominal pain, tenderness, guarding/rigidity; subsided fever; improvement in respiratory symptoms; normalised leucocyte count; complete resolution or significantly decreased size of abscess on ultrasound.

RESULTS

A total of 100 patients with liver abscess were admitted during the study period. The study of 100 patients with liver abscess gave the following results.

The present study found that 43 patients were suffering from amoebic abscess and 57 patients were diagnosed as pyogenic abscess. As illustrated in table 1, majority of the patients with pyogenic abscess were in the age group of 50-59 years, while in patients with amoebic abscess, majority of the patients were in the age group of 30-39 years. Gender distribution of the patients with liver abscess revealed that both the types of liver abscess were more common (>93%) in male gender than in female patients.

Table 1: Socio-demographic profile of patients with liver abscess (n=100)

	Pyogenic (n=57)	Amoebic (n=43)	Total (n=100)
Age (years)			
0-9	0 (0)	0 (0)	0 (0)
10-19	1 (2)	4 (10)	5 (5)
20-29	5 (10)	12 (28)	17 (17)
30-39	7 (21)	16 (37)	23 (23)
40-49	14 (25)	11 (26)	25 (25)
50-59	18 (32)	0 (0)	0 (0)
60-69	7 (12)	0 (0)	0 (0)
70-79	2 (3)	0 (0)	0 (0)
80-89	3 (5)	0 (0)	0 (0)
Gender			
Female	3 (5)	3 (7)	6 (6)
Male	54 (95)	40 (93)	94 (94)

Table 2 demonstrates the predisposing factors and causative agents for liver abscess. Alcoholism (42%) and diabetes mellitus (28%) were the main predisposing factors in case of liver abscess. Escherichia coli (33%) and Klebsiella (25%) are most common etiological agents in case of pyogenic liver abscess.

As per Table 3, the clinical profile of the patients with liver abscess suggests that the most common clinical manifestations were right upper quadrant pain (95%) and fever (60%) followed by cough (10%) and diarrhoea (9%). The most common sign in all 100 patients was right hypochondrium tenderness followed by fever (54%). The other common signs elicited in these patients were acute abdomen with signs of localized peritonitis (guarding/rigidity) (28%), icterus (7%) and hepatomegaly (6%).

Table 2: Predisposing factors and etiologic agents

	Pyogenic (n=37)	Amoebic (n=28)	Total (n=65)
Predisposing Factor			
Biliary tract disease	4 (11)	3 (11)	7 (11)
GI tract disease	5 (14)	3 (11)	8 (12)
Immuno-compromised states	1 (3)	4 (14)	5 (8)
Diabetes mellitus	14 (38)	4 (14)	18(28)
Alcoholism	13 (35)	14 (50)	27 (42)
Organisms in Pyogenic liver abscess			
Patients(n=57)			
Escherichia coli	19 (33)		
Klebsiella	14 (25)		
no growth	4 (7)		
Proteus	2 (3.5)		
Pseudomonas	1 (2)		
Staphylococcus aureus	9 (16)		
Streptococcus viridans	8 (14)		

Figure in parenthesis indicate percentage

Common laboratory finding were hypoalbuminemia (82%), leukocytosis (60%), anaemia (49%), raised serum glutamine pyruvate transaminase (34%), hyperbilirubinemia (28%), raised serum alkaline phosphatase (27%). None of the liver function tests were diagnostic.

Ultrasound findings suggested that liver abscess most commonly involved the right lobe of liver (78%), followed by ruptured abscess (12%) and 6% cases showed multiple liver abscesses.

The study found that peritonitis (55%) and pleural effusion (32%) were the most common complications (table 4).

Table 5 elucidates the treatment and treatment outcomes of the patients with liver abscess. Out of 33 patients with Pyogenic Liver abscess treated with closed aspiration, all were cured. Out of 14 patients with Pyogenic Liver abscess treated conservatively, 9 (64%) patients were cured. Laparotomy was done in 8 patients with pyogenic liver abscess and all were cured. Two out of 3 (67%) patients treated with percutaneous catheter aspiration were cured.

In patients diagnosed with Amoebic Liver abscess, 87% responded to closed aspiration (27 out of 31); 80% responded to medical therapy alone (4 out of 5 patients); 67% responded to percutaneous catheter aspira-

tion (2 out of 3 patients) and all 4 patients on whom laparotomy was performed were cured.

Table 3: Clinical profile of patients with liver abscess (Multiple Answers)

	Pyogenic (n=57)	Amoebic (n=43)	Total (n=100)
Symptoms			
Abdominal pain	54 (95)	41 (95)	95 (95)
Fever	42 (74)	18 (42)	60 (60)
diarrhoea	5 (9)	4 (9)	9 (9)
pruritus	1 (2)	0 (0)	1 (1)
Cough	6 (10.5)	4 (9)	10 (10)
Chest pain	4 (7)	2 (5)	6 (6)
Signs			
Temp ≥ 100	27 (47)	27 (63)	54 (54)
Pulse ≥ 100	11 (20)	5 (12)	16 (16)
Pallor	7 (12)	5 (12)	12 (12)
Icterus	4 (7)	3 (6.9)	7 (7)
Right Hypochondrium Tenderness	57 (100)	43 (100)	100 (100)
Hepatomegaly	4 (7)	2 (5)	6 (6)
Guarding/Rigidity	15 (26)	13 (30)	28 (28)
Laboratory data			
Hb ≤ 10	30 (53)	19 (44)	49 (49)
TC ≥ 10000	35 (61)	25 (58)	60 (60)
Bilirubin ≥ 1	14 (24.5)	14 (32.5)	28 (28)
SGPT ≥ 40	17 (30)	17 (39.5)	34 (34)
sALP ≥ 140	16 (28)	11 (25.5)	27 (27)
Albumin ≤ 3	46 (81)	36 (84)	82 (82)
USG findings			
Multiple Abscesses	3 (5.3)	3 (7)	6 (6)
Ruptured abscess	8 (14)	4 (9.3)	12 (12)
Left lobe	1 (2)	2 (4.6)	3 (3)
Both lobes	0 (0)	1 (2.3)	1 (1)
Right lobe	45 (79)	33 (77)	78 (78)

Figure in parenthesis indicate percentage

Table 4: Distribution according to complications (n=22)

Complication	Pyogenic (n=13)	Amoebic (n=9)	Total (n=22)
Rupture in peritoneal cavity	8 (62)	4 (44)	12 (55)
Pleural effusion	5 (38)	2 (22)	7 (32)
Consolidation	0 (0)	3 (34)	3 (13)

Table 5: Treatment and treatment outcome of patients

Mode of treatment	Pyogenic (n=57) (%)			Amoebic (n=43) (%)		
	Patients	Cured	Not cured	Patients	Cured	Not cured
Conservative	14 (24.5)	9 (64)	5 (36)	5 (12)	4 (80)	1 (20)
Percutaneous catheter drainage	3 (5)	2 (67)	1 (33)	3 (7)	2 (67)	1 (33)
Closed aspiration	33 (58)	33 (100)	0 (0)	31 (72)	27 (87)	4 (13)
Laparotomy	8 (14)	8 (100)	0 (0)	4 (10)	4 (100)	0 (0)

DISCUSSION

The present research was conducted on 100 patients with liver abscess in India. Majority of the patients with pyogenic abscess were in the age group of 50-59 years, while in patients with amoebic abscess, majority of the patients were in the age group of 30-39 years. In a prospective study on 200 patients conducted by Ananthkrishnan Ramani et al. showed that the peak incidence was in the third and fourth decades of life accounting for 59% of total case studies.⁵ In a retrospective study on 200 patients conducted by Navneet Sharma et al.⁶ showed that the mean age of 57 years (range 28 to 82 years). A study conducted in New Delhi reported that the mean age of the patients was 41.13 years (range: 19 to 78 years).⁷

Gender distribution of the patients with liver abscess revealed that both the types of liver abscess were more common (>93%) in male gender than in female patients. In a cross-sectional observational study conducted at New Delhi found that the male to female ratio was 13.3 :1.⁹

The clinical profile of the patients with liver abscess in the present study suggests that the most common clinical manifestations were right upper quadrant pain (95%) and fever (60%) followed by cough (10%) and diarrhoea (9%). In a retrospective review of Liver Abscess patients from three tertiary care centers (2 from Saudi Arabia and 1 from the UK) over a period of 10 years, from 1995 to 2005, conducted by Ali Albenmoussa, et al.⁸ also found that upper abdominal pain and fever were the commonest symptoms, each reported in 87% of the cases of their study.

The present research found that peritonitis (55%) and pleural effusion (32%) were the most common complications. A study by Dr Ananthkrishnan Ramani,⁵ ruptured liver abscess was reported as a complication in 3% cases and pleuro-pulmonary complications were reported in 10% cases. The present study found that in all patients with pyogenic abscess responded to percutaneous drainage while in patients with amoebic liver abscess, the response rate was 87%. Cosme A, et al.⁹ reported in their study that percutaneous drainage in association with adequate antibiotic coverage was successful in 81.8% patients.

The use of needle aspiration in the treatment of uncomplicated liver abscess remains a debatable issue. Although most of these patients respond to antibiotics and supportive care, a significant number eventually require needle aspiration when the abscess size is small

or a later stage, while medical therapy alone is inadequate. An early decision regarding aspiration of liver abscess is therefore important as it is likely to reduce the length of hospital stay and hence the cost of treatment irrespective of the underlying etiology. Most patients in this series also recovered completely on appropriate antibiotics and supportive care. However, in a substantial number of patients, percutaneous needle aspiration was additionally done for complete recovery.

Percutaneous aspiration of pus along with antibiotics provides an excellent result in management of liver abscess as compared to antibiotics or percutaneous aspiration individually. It may eventually avoid the need for surgical exploration. At the same time, it reduces the duration of stay of the patients in the hospital and the incurring costs for the patients. Surgical exploration (laparotomy) should be reserved in case of complicated liver abscesses only, for example rupture into peritoneal cavity.

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