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THE STUDY OF AETIOLOGY, CLINICAL PRESENTATION, MANAGEMENT AND OUTCOME OF LIVER ABSCESS.



MEDICAL SCIENCE

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ABSTRACT

INTRODUCTION: Liver abscess occur as encapsulated collection of suppurative material in the liver parenchyma. The infective etiology may be bacterial, parasitic, and fungal. It is a common condition across the globe. The aim was to study the clinical profile, microbiological aetiology, and investigation profile and treatment outcomes in patients with liver abscess.

MATERIALS AND METHODS: A retrospective study was conducted from year Aug 2014 to Aug 2016 on 50 consecutive liver abscess patients at tertiary care Hospital, Mumbai, Maharashtra, India. Medical records were analysed for clinical features, examination findings, laboratory investigations, radiological tests, microbiological analysis and treatment modalities. Descriptive statistics were used.

RESULTS: The mean age of patients was 41.64 years. Majority were male alcoholics. The abscesses were commonly in right lobe (72%) and solitary (78%). Abscesses were predominantly amoebic in 94%. Percutaneous needle aspiration was done in 16%, pigtail drainage in 70% and surgical intervention for rupture in 4% patients. Mortality was 2% with all death reported in surgical group.

CONCLUSIONS: Amoebic liver abscess is more common than pyogenic liver abscess. Commonly occurs in young alcoholic males. Most common presenting feature is pain abdomen followed by fever. Most common sign include tender hepatomegaly. Ultrasound abdomen is useful not only in diagnosis and intervention but also in the follow up of the condition and to assess resolution.

KEYWORDS

Amoebic liver abscess, Liver abscess, Lobes of liver, pyogenic liver abscess, Percutaneous aspiration, Percutaneous catheter drainage

INTRODUCTION

Liver abscess is defined as collection of purulent material in liver parenchyma which can be due to bacterial, parasitic, fungal, or mixed infection.¹ In developing countries like India the commonest cause of liver abscess is parasitic liver infection, however in western countries pyogenic liver abscess predominate.² Amoebiasis results from infection with *E. histolytica* and is the third most common cause of death from parasitic disease. Invasive colitis and liver abscesses are sevenfold more common among men than among women; this difference has been attributed to a disparity in complement-mediated killing.³ Co morbid conditions associated with pyogenic abscess are cirrhosis, diabetes, chronic renal failure, and a history of malignant disease. The mortality for all patients with amoebic liver abscess is approximately 5% but when the abscess ruptures, mortality ranges from 6% to as high as 50%.⁴ Minimal surgical interventions like percutaneous aspiration and percutaneous drainage are better than conservative treatment for the management of liver abscesses of size >5 cm, in terms of duration to attain clinical relief and duration for which parenteral antibiotics are needed.⁵ This study tries to retrospectively evaluate the clinical profile, the microbiological aetiology and management outcomes in patients diagnosed with liver abscess

MATERIALS AND METHODS:

It was a retrospective study conducted in the department of General Surgery at tertiary care centre in Mumbai, India. The data was collected in a predesigned proforma by systemic analysis of medical records of 50 patients admitted with liver abscess from Aug 2014 to Aug 2016. Inclusion criteria included all patients with pyogenic, amoebic and tubercular liver abscess of either sex aged 18 years and above. malignant disease of hepatobiliary system and those pregnant were excluded. The medical records were reviewed with respect to history of presenting complaint and duration, risk factors for liver abscess (, diabetes, alcohol consumption, systemic examination findings, blood investigations (complete blood count, renal function test, liver function test), and imaging studies (ultrasonography abdomen, Chest x-ray, CT scan) and the treatment protocol followed. According to the hospital antibiotic policy patients were empirically started on intravenous ciprofloxacin 500mg q12hrly and intravenous metronidazole 400mg q8hrly until pus culture and sensitivity reports were available. All data were collected in MS excel sheet and analysed using descriptive statistics.

RESULTS

Medical records of a total of 50 patients with liver abscess were studied and analysed. The mean age of patients was 41.64 years (sd 14.95). Male to female ratio was 3.5:1. Most common presenting complaint was pain abdomen in 98% (n = 49), followed by fever in 86% (n = 43). In our study 40% (n = 20) patients were alcoholic and 14% (n = 7) patients were diabetic.

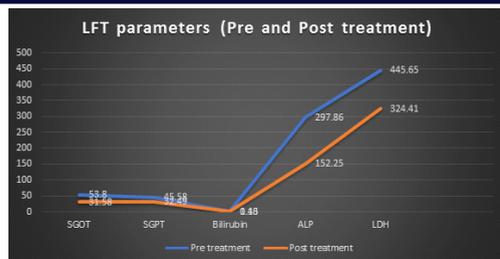
Table 1: Clinical presentation of patients.

Features	Percentage
Pain abdomen	98
Fever	86
Anorexia	66
Diarrhoea	14
Risk factors	
Alcoholic	40
Diabetes	14
Signs	
Pallor	8
Icterus	16
Hepatomegaly	56
Right hypochondriac tenderness	98
Ascites	16
Pleural Effusion	42
Peritonitis	4

There was significant decrease in the LFT level was observed on discharge as compared to admission amongst study population. **Significant P Value <0.05**

Table no 2 LFT parameters (Pre and Post treatment) amongst study population

LFT	Pre treatment		Post treatment		P value
	Mean	Std. Deviation	Mean	Std. Deviation	
SGOT	53.82	47.83	31.58	8.562	0.001
SGPT	45.578	33.9164	32.49	9.507	0.003
Bilirubin	1.16	2.464	0.426	2.562	0.025
ALP	297.86	173.083	152.25	20.006	0.0001
LDH	445.65	165.806	324.41	76.392	0.001



On chest X ray Right Side Pleural Effusion (38%) was the most common Chest X ray finding followed by Consolidation (6%). Chest X ray features have been summarized in Table 3

Table no 3 Chest X ray findings

Types of lung pathology		Frequency	Percent
Pleural effusion	Right side	19	38
	Left side	1	2
	Bilateral	1	2
Grade of pleural effusion	Mild	18	36
	Moderate	3	6
	Severe	0	0
Consolidation		3	6
Loculated Hydropneumo thorax		1	2
Iatrogenic pneumothorax during catheter drainage		1	2
Normal lung		24	48

On ultrasonographic examination of abdomen of these cases right lobe was most commonly involved in 72% (n = 36). A solitary liver abscess was found in 78% (n = 39) cases. However 16% (n=8) patients had liver abscess in both lobes. Most common segment involved was segment VII followed by segment VIII. Ultrasonography features have been summarized in Table 4.

Table 4: Ultrasound findings.

Lobe	Frequency	Percent	
Right lobe	36	72	
Left lobe	6	12	
Bilateral lobe	8	16	
Liver segment involvement	Frequency	Percent	
	I	1	2
	II	5	10
	III	4	8
	IV	7	14
	V	10	20
	VI	17	34
	VII	26	52
VIII	23	46	

Patients were managed according to the protocol mentioned. Out of 50 patients 4% of patients (n = 2) presented with features of peritonitis secondary to ruptured liver abscess where open surgical drainage was done. 2% of patients (n = 1) were put on conservative treatment with intravenous ciprofloxacin and intravenous metronidazole. 16% (n = 8) of the patients had ultrasound guided percutaneous needle aspiration of their abscesses with 16 G spinal needle who were sick/toxic with small cavity abscess <5 Cm. Left lobe abscesses <5cm and 78% (n = 39) underwent ultrasound guided pigtail catheter drainage.

After noting the appearance of the pus, it was sent for culture and sensitivity for gram staining and ZN staining for AFB. The microbiological profile of the pus has been summarised in Table 4. The pus with anchovy sauce appearance and negative culture after 48 hours of aerobic incubation was presumed to be of amoebic origin. Most common liver abscess was Amoebic in 94%, followed by pyogenic (4%) and 2% were tuberculous.

PUS culture and antibiotic sensitivity	Frequency	Percent
NA	1	2
Acid Fast Bacilli Culture Positive	1	2
Growth positive (Ecoli and Streptococcus)	2	4
No Growth (amoebic)	46	92

DISCUSSION

liver abscess is common in tropical regions like the Indian subcontinent. The common etiological agents for liver abscess are E.

histolytica (amoebic), bacterial (pyogenic), mycobacterium tuberculosis and various fungi. Out of them, amoebic liver abscess is largely a disease of developing countries like India.¹ The liver is the organ subject to the development of most abscesses in abdomen. Organisms recovered from liver abscesses vary with the source. In liver infections arising from the biliary tree, enteric gram-negative aerobic bacilli and enterococci are common isolates. In contrast, in liver abscesses arising from pelvic and other intraperitoneal sources, a mixed flora including both aerobic and anaerobic species is common; B. fragilis is the species most frequently isolated. With hematogenous spread of infection usually only a single organism is encountered; this species may be S. aureus or a streptococcal species such as one in the Streptococcus milleri group.³

Most patients are febrile and have right-upper quadrant pain, which may be dull or pleuritic in nature and may radiate to the shoulder. Point tenderness over the liver and right-sided pleural effusion are common. Jaundice is rare. Although the initial site of infection is the colon, fewer than one-third of patients with an amoebic abscess have active diarrhoea.³

In our study amoebic liver abscess was reported in 96 % of cases. Most of the cases had solitary abscess in right lobe of liver (78%). Mukhopadhyay et al in a prospective study reported liver abscesses involving right lobe in 85.53% of cases.⁵ The predilection of liver abscess for right lobe is because of streaming effect in portal circulation. It receives most of blood draining from right colon, the primary site of intestinal amoebiasis.¹ In our study 72% cases reported right side abscess segment VII being most common followed by segment VIII, 12% in left lobe and 16% in both lobe.

Mean age of patients was 41.64 years. Male to female ratio was 3.5 :1. The age predisposition and gender differences may be as a result of high alcohol intake by young male which predisposes to amoebic liver abscess. In a prospective study by Makkar et al the liver iron was found to be significantly higher in patients with amoebic liver abscess, both alcoholic and non-alcoholic. The higher liver iron in alcoholic amoebic liver abscess cases was presumably due to regular alcohol use. Also, because of the regular menstrual blood loss, females in the reproductive age group are known to have lower iron stores. This low iron, which is unsuitable for the growth of E. histolytica, might act as a protective factor against the invasion of E. histolytica in such females.⁷ Most common symptoms of liver abscess are pain abdomen and fever which were present in 98% and 86% of our patients, respectively. Ghosh et al have reported fever as most common feature in 99% cases and Sharma et al have reported pain abdomen in 78% cases. pleural effusion in 42 % of cases.^{1,8} Mukhyopadhyaya et al report pleuropulmonary involvement in 24% of cases.⁶ Pleuropulmonary involvement which is reported in 20 - 30% of patients, is the most frequent complication of amoebic liver abscess. Manifestations include sterile effusions, contiguous spread from the liver and rupture into the pleural space. Sterile effusions and contiguous spread usually resolve with medical therapy.³ Amoebic peritonitis is considered to be the second most common complication of amoebic liver abscess. Mukhyopadhyaya et al reported an incidence of 26.39% of peritonitis in their study.⁶ However in our study incidence was found to be 4%. The size of the abscess appears to be the most important risk factor for rupture, and the overall incidence of rupture ranges from 3% to 17%.⁴ Icterus was reported in 16 % of our patients. In earlier studies from India, it was reported in 45 - 50% of patients. But after advent of good antimicrobial therapy, it has become less common.¹ Mild abnormalities of LFT results, including albumin, PT-INR, ALP, AST, and bilirubin levels, are typical. The most common LFT abnormality is an elevated PT-INR.⁴ Mechanism of hyperbilirubinemia in amoebic liver abscess has been studied previously in many studies. Various mechanisms were suggested like pressure on biliary ducts at the porta hepatis especially by large abscess.⁹ Sharma et al observed that jaundice occurs because of intrahepatic obstruction or associated hepatitis and is usually seen in large or multiple abscesses; abscess situated at porta hepatis is more likely to produce jaundice because of extra-hepatic obstruction.⁸

Ultrasound and CT scanning of the abdomen are both very sensitive but nonspecific for the detection of amoebic abscesses.¹⁰ Ultrasonography, though observer dependent, is widely accepted as a first time technique for imaging focal hepatic lesions including liver abscesses. This is attributable to its low cost, greater availability and high accuracy. It is useful not only in diagnosis and intervention but also in the follow up of the condition and to assess resolution.⁶

As per the latest management protocol of minimally invasive aspiration 16% of patients underwent USG guided percutaneous needle aspiration and 78% underwent USG guided pigtail catheter drainage, according to hospital antibiotic policy intravenous ciprofloxacin and intravenous metronidazole injections were used which were changed according to pus culture and sensitivity report. Indication for laparotomy was peritonitis following rupture of liver abscess, 4% of patients underwent surgical intervention. Overall mortality was 2%. The overall mortality rate seen in amoebic liver abscess from various series ranges from 2-15%.⁷ The most recent series from Memorial Sloan Kettering Cancer Centre (MSKCC) has reported a 3% mortality. The presence of malignant disease, factors associated with malignant disease (e.g., jaundice, markedly elevated LFT results) and signs of sepsis appear to be consistent markers of poor prognosis.⁴

Our study has certain limitations, as this was a retrospective analysis we diagnosed amoebic liver abscess based on negative culture report of 48hrs of aerobic culture, anchovy sauce appearance of pus, clinical and radiological improvement with anti-amoebic drugs. None of our patients with amoebic liver abscess do not have detectable amoebae in their stool, the most useful laboratory evaluation is the measurement of circulating anti-amoebic antibodies, which are present in 90% to 95% of patients. A number of serologic tests have been devised over the years. An enzyme immunoassay has a reported sensitivity of 99% and specificity higher than 90% in patients with hepatic abscess. Unfortunately, the presence of antibodies may reflect prior infection, and interpretation can be difficult in endemic areas.

CONCLUSION:

Amoebic liver abscess is more common than pyogenic liver abscess. Commonly occurs in young alcoholic males. Most common presenting feature is pain abdomen followed by fever. Most common sign include tender hepatomegaly. Patients presenting with pain in upper abdomen on right side and fever with tender hepatomegaly should raise a clinical suspicion of liver abscess. Ultrasound abdomen is useful not only in diagnosis and intervention but also in the follow up of the condition and to assess resolution.

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