

Original Research Article

A study of clinical profile and treatment outcome in patients of liver abscess admitted in a tertiary care centre

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ABSTRACT

Background: Liver diseases have a wide range of clinical implications. Commonly found to be pyogenic or amoebic in origin, fungi and parasites account for a small percent of cases. Liver abscesses have been linked to a mortality rate as high as 20%. Underdeveloped nations have greater rates of amoebic liver abscess (ALA). The study was performed to analyse the clinical manifestation and treatment outcome among patients with hepatic abscesses.

Methods: It was a cross-sectional, observational study. The study took place for one year at Indira Gandhi Institute of Medical Sciences (IGIMS), Patna, Bihar, India. Total 100 patients were enrolled into this study. Ethical clearance to conduct this study was obtained from Institutional Ethics Committee (IEC) of IGIMS, Patna, Bihar, India under letter no. 752/IEC/IGIMS/2022 dated 06 October 2022.

Results: Average age in years of included participants was 42.82 ± 11.33 . Total 90 male participants were enrolled into the study and 10 female participants were part of the study. Forty-seven individuals with bilirubin levels above normal had clinical jaundice. Hemoglobin levels below 11 gm% were identified in 64 cases (64%), with the lowest recorded hemoglobin in this series being 6.7 gram%. The study determines an important statistically significant correlation (p value = 0.000109) between the alcohol consumption and amoebic liver abscess.

Conclusions: The study concluded that substantial statistical association between alcohol use and liver abscess. Single, isolated abscesses were more prevalent than multiple abscesses, and the right lobe of the liver was more frequently afflicted. The medical management therapy has been provided to all the patients.

Keywords: Liver abscess, Amoebic liver abscess, Alcohol intake, Bilirubin, Pyogenic liver abscess

INTRODUCTION

Liver disorders can have a variety of clinical effects. Among these, liver abscesses are prevalent all across the world, especially in tropical nations.¹ India has a significant prevalence of liver abscesses, ranking second globally in terms of incidence worldwide among developing nations.¹ Commonly found to be pyogenic or amoebic in origin, fungi and parasites account for a small percent of cases.² Liver abscesses have been linked to a mortality rate as high as 20%.³ Based on the underlying aetiology, there are several forms of liver abscesses. Liver abscesses are classified into two main types: pyogenic and amoebic. It's worth noting that amoebic liver abscess

(ALA) is more prevalent in developing nations.³ A variety of microbes contribute to the development of pyogenic abscesses to list a few organisms which include *Staphylococcus*, *Escherichia coli*, *Streptococcus*, *Klebsiella* species, and anaerobic organisms, which are more common.³

The causation of pyogenic abscesses has significantly changed in modern times.⁴ In pyogenic liver abscess most, common contributing factor is biliary tract blockage.⁵ Majority of cases factors that contribute to impaired host immunity, lead to a high risk of abscess formation, fungal and *Mycobacterium* species (liver cirrhosis, diabetes

mellitus, or cancer) though conclusive research on this topic is lacking.⁶

Treatment for liver abscesses with amoebic origins has evolved as a result of the realisation that colonic amoebiasis is a prelude to liver abscesses. Attempts with only open surgical drainage have mixed results. Attempts to treat the colonic infection and liver abscess had increased success outcomes. Combination amoebicidal drugs and closed aspiration guided by the ultrasonography (USG) have become the preferred course of treatment. The range of open procedures has decreased in the laparoscopic era.⁷

ALA stands as the primary type of liver abscess observed in patients seeking care at tertiary institutions. Significantly, liver abscesses are more common in men, and there is a direct link between their frequency with conditions like diabetes mellitus, drunkenness, and poorer socioeconomic status. However, it's important to recognize that individuals from mid- to high socioeconomic backgrounds are also affected by this condition. A liver abscess can become a fatal condition without prompt diagnosis and appropriate treatment.^{8,9}

The research was done to analyse the clinical manifestation and treatment outcome among patients with hepatic abscesses. The study mainly focussed on liver abscesses-related risk factors, patients' clinical profile, abscess aetiology and the treatment outcome of patients with liver abscess.

METHODS

Study design

The study was a cross-sectional observational study. The study took place for one year at Indira Gandhi Institute of Medical Sciences (IGIMS), Patna, Bihar, India. Study period was October 2022 to September 2023.

Study population

Total 100 patients were enrolled into this study. The inclusion criteria for enrolment of patients were participants with age distribution between 18-60 years, individuals with a clinically confirmed liver abscess and radiologically and all those patients with liver abscess who were referred to IGIMS, Patna. The exclusion criteria were participants who had traumatic injury causing Liver Abscess and those who were previously treated for liver abscess.

Data collection

Initially, written informed consent was taken from each participant before their enrolment in the study. Other demographics data such as age, gender and history were obtained by the participants. Laboratory and radiological findings were enlisted in patients' findings.

Statistical analysis

The data collected was analysed using statistical package for the social sciences (SPSS) statistic software 21.0. Data was summarized as mean and standard deviation for numerical variables and count and percentages for categorical variables. Spearman's Chi-square test was done to obtain p value. P value was considered significant at <0.05.

RESULTS

Table 1 represents patients' demographics in this study. Average age in years of included participants was 42.82±11.33. Total 90 male participants were enrolled into the study and 10 female participants were part of the study.

Table 1: Patient's demographics.

Characteristics	Values
Age (in years)	42.82±11.33
Male participants (%)	90 (90)
Female participants (%)	10 (10)

Data were presented as mean±SD or N (%)

During examination, 47% of patients had icterus, 35% of patients had pallor, 87% of patients had hepatomegaly, and 48% of patients reported abdominal discomfort. Eighty percent of cases had an elevated temperature. Reduced right sided basal air entry was found in 51% of the patients' respiratory results. Table 2 elaborated clinical signs and symptoms in liver abscess patients (Table 2).

Table 2: Clinical signs and symptoms.

Signs and symptoms	Values (%)
Abdominal pain	94 (94)
Fever	80 (80)
Cough	15 (15)
Pallor	35 (35)
Icterus	47 (47)
Abdominal tenderness	48 (48)
Hepatomegaly	87 (87)
Respiratory findings	51 (51)

Data was presented as N (%)

In 67% of instances, a lower albumin level (less than 3.5 gm/dl) was found. In 24% of the instances, the prothrombin time was greater than 20 seconds. Of the 47 individuals with a bilirubin level over normal, 47 had clinical jaundice. Hemoglobin levels below 11 gm% were identified in 64 cases (64%), with the lowest recorded hemoglobin in this series being 6.7 gram%. Leucocytosis, exceeding 11,000 cells/cu mm, was observed in 78 cases (78%).

In our study some patients exceeded 30,000 cells/cu mm additionally. Table 3 enumerated laboratory findings of the enrolled participants.

Table 3: Laboratory findings.

Parameters	Values
Anaemia (hemoglobin <11 gm%)	9.8±1.48
Leucocytosis (>11,000 cells/cu cm)	21.2±10.28
Bilirubin (/mg%)	2.9±2.79
Hypoalbuminemia (<3.5 gm/dl)	2.6±0.46
Increased prothrombin time (>20 sec)	19.8±17

Data were presented as mean±SD

Table 4 shows radiological findings of participants with liver abscess. 33% of cases showed multiple abscesses and 67% of patient of abscesses had single abscesses as per ultra-sonogram investigation. Pleural effusion was seen in 47 percent of the patients. The right lobe of the liver showed the highest degree of involvement. Specifically, 64% exhibited right lobe involvement, 3% showed left lobe involvement, and 33% displayed.

Table 4: Radiological findings.

Parameters	Values (%)
CX-R (pleural effusion)	47 (47)
Lobe involvement	
Right lobe	64 (64)
Left lobe	03 (3)
Both lobes	33 (33)

Data was presented as n (%)

Out of 91 cases, 60 (65.9%) had positive amoebic serology tests. Although growths were produced in 31 (34%) of these cases, in 22 (24.1%) and 9 (9.8%) of these cases,

Table 6: Association of parameters with amoebic serology.

Parameters	Amoebic serology (-ve)	Amoebic serology (+ve)	Chi-square value	P value
Fever absent	5	15	1.628	0.202
Fever present	35	45		
Abdominal pain absent	1	5	0.598	0.439
Abdominal pain present	39	55		
Alcohol intake absent	24	12	14.976	0.0001
Alcohol intake present	16	48		

Data is presented in numbers, p value was considered significant at <0.05, Spearman's Chi-square test was used to obtain p value.

DISCUSSION

The study included one hundred individuals with liver abscesses who met the inclusion criteria. The study group exhibited mean age distribution of 42.82±11.33, ranging from the youngest age 18 years to the eldest at 60 years. In this study, males experienced liver abscesses at a rate of 90% compared to women's 10%.

The average age was found to be lower than what was seen in previous research. Research conducted by Gaisford et al states that the sex ratio is 7:1, but our analysis shows a variation of a 9:1 ratio.¹⁰

non-fermenting gram-negative and gram-positive organisms were grown. Table 5 represents microbial assessment of different species including *E. histolytica* (*E. coli*), gram negative and gram positive.

Table 5: Microbial assessment.

Species	Number of patients (%)
<i>E. histolytica</i> (amoebic serology)	60 (65.9)
Gram negative bacteria	22 (24.1)
Gram positive bacteria	09 (9.8)

Data was presented as n (%)

The data shows no statistically significant correlation between fever as symptom and amoebic or pyogenic liver abscess (p value=0.202). A marginally higher number of cases presented with fever had positive amoebic serology, i.e., 45 cases compared to negative amoebic serology, i.e., 35 cases. A higher number of cases presented with abdominal pain had positive amoebic serology, i.e., 55 cases compared to negative amoebic serology, i.e., 39 cases.

The study determines an important statistically significant correlation (p value =0.000109) between the alcohol consumption and amoebic liver abscess. The results show that in individuals with a history of alcohol use, amoebic liver abscesses are more prevalent than pyogenic liver abscesses. Table 6 shows association of parameters with amoebic serology.

In this study a lower incidence of fever was recorded, 80% of patients. 94% of patients reported having pain in their abdomen, compared to 84% of cases reported by Greenstein et al and 47% cases were reported in research by Rubin et al.^{11,12} In our study, cough was a non-significant presentation that affected only 15 patients.

In this study alcohol uptake was identified to be the common etiological factor. It was discovered that 64% of the cases in the study were alcoholic. Numerous studies have noted alcoholism's existence as a risk factor. According to a study conducted by Mathur et al, alcoholism was found to be present in 48–71% of liver abscess patients. Inadequate personal cleanliness and the ingestion of tainted food contribute considerably to the

formation of liver abscesses, which in turn contaminates the bacterial and parasite causes of the illness.¹³

Haemoglobin levels <11 grammes per decilitre were present in 64% of the participants in our current investigation. Less research has been done in the literature to support the theory that anaemia increases the risk of liver abscess. Nevertheless, a substantial number of cases exhibit a high incidence of anaemia, and the connection between them is not well comprehended.

As per a study conducted by Chu et al, an unfavourable predictive factor for liver abscesses cases was hypoalbuminemia. In our study 67% patient presented with hypoalbuminemia.¹⁴

According to research by Greenstein et al, 24% of patients had a right pleural effusion and 40% of patients had a raised right hemi diaphragm.¹¹

According to abdominal ultrasound, the lobe was involved in 64% of the patient. Contrary to the results of a comparable research by Satiani et al, which found that 79% of patients showed involvement in the right lobe, the findings were.¹⁵ In the present investigation, 3% of patients had involvement in the left brain, 33% in both lobes, and 64% in the right lobe.

There were 33% of patients with numerous abscesses and 67% of instances with a single abscess in the current research. The outcome was in line with studies by Rajak et al and associates, who discovered that 72% of abscesses were solitary and 18% were numerous.¹⁶

All 100 patients were treated conservatively and medically managed with appropriate dosages of anti-amoebic and antibiotic drugs. Intravenous metronidazole was administered to all patients at a dose of 40 milligrammes per kilogramme weight (two to three grammes per day, split between two to ten days). Patients who showed no improvement after receiving metronidazole medication for 24 to 48 hours were concurrently started on broad-spectrum third-generation cephalosporins.

Limitations

One of the limitations was that the study did not include any comparative group for better comparisons. Another limitation was that the study was single centric that may limit generalizability of the findings. Further research may help in assessment of outcomes and better treatment modalities in patients with liver abscess.

CONCLUSION

Our study concluded that the most common presenting symptom was abdominal discomfort, which was followed by fever. Statistically significant association between alcohol intake and liver abscess was observed. Single solitary abscesses were more frequent than multiple

abscesses. Also, right lobe of liver was involved in most cases. Further, the medical management therapy has been provided to all the patients. A solitary abscess as well as multiple small abscesses were effectively managed with conservative antibiotic therapy with ultrasonography guided percutaneous aspiration and large abscesses with pigtail insertion and drainage.

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REFERENCES

1. Channanna C, Rehman FU, Choudhuri B, Patil A. A clinical study, diagnosis and Management of Liver Abscess at VIMS, Bellary. J Evid Based Med Health Care. 2014;1:668-85.
2. Jha AK, Das A, Chowdhury F, Biswas MR, Prasad SK, Chattopadhyay S. Clinicopathological study and management of liver abscess in a tertiary care center. J Nat Sci Biol Med. 2015;6(1):71-5.
3. Perez Jr JY. Amoebic liver abscess: Revisited. Philip J Gastroenterol. 2006;2:11-3.
4. Czerwonko ME, Huespe P, Bertone S, Pellegrini P, Mazza O, Pekolj J, et al. Pyogenic liver abscess: current status and predictive factors for recurrence and mortality of first episodes. HPB (Oxford). 2016;18(12):1023-30.
5. Branum GD, Tyson GS, Branum MA, Meyers WC. Hepatic abscess. Changes in etiology, diagnosis, and management. Ann Surg. 1990;212(6):655.
6. Mohsen AH, Green ST, Read RC, McKendrick MW. Liver abscess in adults: ten years experience in a UK centre. QJM. 2002;95(12):797-802.
7. Ochsner A. Pyogenic liver abscess. World J. Surg. 1938;40:292-319.
8. Akhondi H, Sabih DE. Liver abscess. StatPearls. 2022.
9. Sharma S, Ahuja V. Liver Abscess: Complications and Treatment. Clin Liver Dis (Hoboken). 2021;18(3):122-6.
10. Gaisford WD, Mark JB. Surgical management of hepatic abscess. Am J Surg. 1969;118(2):317-26.
11. Greenstein AJ, Lowenthal D, Hammer GS, Schaffner F, Aufses AH Jr. Continuing changing patterns of disease in pyogenic liver abscess: a study of 38 patients. Am J Gastroenterol. 1984;79(3):217-26.
12. Rubin RH, Swartz MN, Malt R. Hepatic abscess: changes in clinical, bacteriologic and therapeutic aspects. Am J Med. 1974;57(4):601-10.
13. Matur S, Gehlot RS, Mehta A. Liver abscess. J Indian Acad Clin Med. 2002;3(4):78-9.
14. Chu KM, Fan ST, Lai EC, Lo CM, Wong J. Pyogenic liver abscess: an audit of experience over the past decade. Arch Surg. 1996;131(2):148-52.
15. Satiani B, Davidson ED. Hepatic abscesses: improvement in mortality with early diagnosis and treatment. Am J Surg. 1978;135(5):647-50.

16. Rajak CL, Gupta S, Jain S, Chawla Y, Gulati M, Suri S. Percutaneous treatment of liver abscesses: needle aspiration versus catheter drainage. *Am J Roentgenol.* 1998;170(4):1035-9.

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