

A clinical profile of patients with liver abscess at a rural tertiary care centre at the MGM medical college

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Abstract

A liver abscess, also known as a hepatic abscess, is an accumulation of pus within the liver as a result of an infection. Overall liver abscesses are fairly rare and more frequently seen in developing nations. Most liver abscesses are caused by bacteria and amebic parasites (protozoa). However, other protozoa, fungi and helminths (parasitic worms) may also be responsible for hepatic abscesses. Methods: The present study was conducted in the indoor patients of medicine ward as well as on patients attending medicine OPD at M.G.M. Medical College and L.S.K. Hospital Kishanganj, Bihar. This study included 60 patients, out of 75 patients who were reported in Outdoor or admitted in Emergency Department remaining 15 patients were dropped out. The study period was Nov 2017 to September 2018 in M.G.M. Medical College and L.S.K. Hospital. The selection of the patients was based on clinical history, clinical examination and ultrasound findings. Those patients who were serologically positive for viral hepatitis, malaria (optimal test) and kalazar (rK 39) were excluded from this study. Results: There are 85 % male and 15 % female in this study. Age range varied from 12 to 70 years. The highest incidence was found in 31-40-year age group. Maximum number of cases were from rural areas 78.3% and remaining 21.7% from urban. The majority of cases 42/60 had leukocytosis (median -14,100) but 18 cases had white blood cells count within normal limit. Polymorphnuclear cells (median-81%) were predominantly present. Abnormally high alkaline phosphatase were seen in 82% of cases. There were six cases in which *E. histolytica* was detected in routine examination of stool. No single case was seropositive to HIV I and II serum creatinine level found to be within normal range in all cases. Conclusion: There was no mortality. Prognosis was better. It was due to early diagnosis of the diseases and early intervention.

Key Word: liver abscess.

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INTRODUCTION

Liver abscess has been an important clinical problem which requires prompt diagnosis and early interventions. Two types of liver abscess are common –Amoebic or

protozoal (ALA) and Pyogenic liver abscess (PLA). Worldwide about 40-50 million people are infected with amoebic abscesses with majority in developing countries.¹ Hepatic involvement is a frequent extra-intestinal complication which is encountered in 3 to 9% of the cases of amoebiasis² The prevalence of infection of amoebic abscess is higher than 5-10%³ and has been reported as high as to be 55% in some areas⁴. India has 2nd highest incidence of liver abscess in the world⁵. PLA and ALA have many features in common and diagnosis is often delayed due to vague clinical symptoms resulting in adverse outcomes⁶. Liver abscesses, both amoebic and pyogenic, continue to be an important cause of morbidity and mortality in tropical countries. However, recent advances in interventional radiology, intensive care, progress in antibiotic therapy, and liberal use of

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sonography and computerized tomography scanning of the abdomen have led to early diagnosis and treatment of patients with liver abscess, thus improving the patient outcome⁷. PLA is still a serious illness and diagnostic challenge⁸. So identification of risk factors and early diagnosis are the key issues for effective interventions. Information on LA is very limited from this part of the country. Keeping all these views in mind; the present study was conducted with the following objectives:

1. To see the types of liver abscess prevalent in the area
2. To study the different socio-demographic and clinical correlates
3. To compare between the major types of liver abscesses.

Amebic liver abscess: Amebic liver abscess is the most frequent extraintestinal manifestation of *Entamoeba histolytica* infection. This infection is caused by the protozoa *E. histolytica*, which enters the portal venous system from the colon. Amebic liver abscess is an important cause of space-occupying lesions of the liver, mainly in developing countries. Prompt recognition and appropriate treatment of amebic liver abscess lead to improved morbidity and mortality.

Pathophysiology: *E. histolytica* exists in 2 forms. The cyst stage is the infective form, and the trophozoite stage causes invasive disease. People who chronically carry *E. histolytica* shed cysts in their feces; these cysts are transmitted primarily by food and water contamination. Rare cases of transmission via oral and anal sex or direct colonic inoculation through colonic irrigation devices have occurred. Cysts are resistant to gastric acid, but the wall is broken down by trypsin in the small intestine. Trophozoites are released and colonize the cecum. To initiate symptomatic infection, *E. histolytica* trophozoites present in the lumen must adhere to the underlying mucosa and penetrate the mucosal layer. Liver involvement occurs following invasion by *E. histolytica* into mesenteric venules. Amebae then enter the portal circulation and travel to the liver where they typically form one or more abscesses. The *E. histolytica* galactose/*N*-acetyl-D-galactosamine (Gal/GalNAc) lectin is an adhesion protein complex that sustains tissue invasion.⁹ The abscess contains acellular proteinaceous debris, which is thought to be a consequence of induced apoptosis¹⁰ and is surrounded by a rim of amebic trophozoites invading the tissue. The right lobe of the liver is more commonly affected than the left lobe. This has been attributed to the fact that the right lobe portal laminar blood flow is supplied predominantly by the superior mesenteric vein, whereas the left lobe portal blood flow is supplied by the splenic vein.

Epidemiology:

The following are the risk factors associated with amebic liver abscess:

- Immigrants from endemic areas
- Institutionalized persons, especially people with mental retardation
- Crowding and poor hygiene
- Men who have sex with men (secondary to sexually acquired amebic colitis)
- Presence of immunosuppression (eg, human immunodeficiency virus [HIV] infection, malnutrition with hypoalbuminemia, alcohol abuse, chronic infections, posttraumatic splenectomy, steroid use)
- Amebic liver abscess is rare and is currently seen almost exclusively in immigrants or travelers to the United States. In 1994, 2,983 cases of amebiasis were reported to the Centers for Disease Control and Prevention (CDC). The disease was removed from the National Notifiable Diseases Surveillance System in 1995. An estimated 4% of patients with amebic colitis develop an amebic liver abscess.
- An estimated 10% of the population is infected with *Entamoeba dispar*. Previously thought to be a nonpathogenic strain of *E. histolytica*, this type of amoeba does not produce clinical symptoms even in the immunocompromised host.
- Race-, sex-, and age-related demographics
- All races can be affected by amebic liver abscess. Risk factors for infection include travel or residence in endemic areas.
- Amebic liver abscess is marked by a 7-12-fold higher incidence in males than in females despite an equal sex distribution of noninvasive colonic amebic disease among adults.¹¹ However, no sexual preponderance exists among children.
- Peak incidence of amebic liver abscess occurs in people in their third, fourth, and fifth decades of life, although it can occur in any age group.
- International data
- Worldwide, approximately 40-50 million people are infected annually, with the majority of infections occurring in developing countries. The prevalence of infection is higher than 5-10% in endemic areas¹¹ and sometimes as high as 55%.¹² The highest prevalence is found in developing countries in the tropics, particularly in Mexico, India, Central and South America, and tropical areas of Asia and Africa.

MATERIALS AND METHODS

Abscess are localized collections of purulent inflammatory tissue caused by suppurative buried in a tissue, an organ, or a confined space. A liver abscess is a pus-filled mass inside the liver. This study included 60 patients, out of 75 patients who were reported in Outdoor or admitted in Emergency Department remaining 15 patients were dropped out. The selection of the patients was based on clinical history, clinical examination and ultrasound findings. Those patients who were serologically positive for viral hepatitis, malaria (optimal test) and kalazar (rK 39) were excluded from this study. Each patient was subjected for detailed clinical history and clinical examination. Patients' name, age, gender, registration number and clinical symptoms with duration from onset and signs on thorough clinical examination were noted down.

Study Period: From November 2017 to September 2018 in M.G.M. Medical College and L.S.K. Hospital.

Inclusion Criteria: Patients of liver abscess, (both amoebic and pyogenic) diagnosed from history, physical examination, laboratory and radiological investigation.

The following parameters were included in clinical history and examinations:

1. Presenting complaints (symptoms and duration); common symptoms were fever, pain abdomen, loss of appetite, nausea or vomiting, loose motion, cough, dyspnea, pain chest and other symptoms
2. History of presenting illness.
3. Past history of diabetes, tuberculosis, diarrhea or dysentery or any chronic illness.
4. Personal history: about his/her habit, residence in rural or urban area, ever working outside Bihar.
5. Thorough clinical examination common signs were:
 - (i) Temperature
 - (ii) Enlarged palpable liver (consistency and tenderness)
 - (iii) Inter costal tenderness
 - (iv) Absence or presence of icterus, pallor
 - (v) Dullness in abdomen and other signs.

RESULTS

Table 1: Showing Age and Sex Distribution of Cases under Study (n=60)

Age (in years)	Male		Female	
	No of Patients	Percentage (%)	No of Patients	Percentage (%)
< 20	01	1.7	00	00
21 - 30	08	13.3	00	00
31 - 40	25	41.7	06	10.0
41 - 50	10	16.7	02	3.3
51 - 60	05	8.3	01	1.7
61 - 70	02	3.3	00	00
Total	51	85.0	9	15.0

Above table shows that out of total number of cases studied (n=60), 85% were male while 15% were female. The age of cases varied from 12-70 years. The maximum incidence was observed in 31- 40 years age group (51.7%) in which 41.7% were male and 10% were female.

Table 2: Showing Duration of Symptoms of Cases under Study (n=60)

Duration of Symptoms (in weeks)	No. of Patients	Percentage (%)
< 1	04	6.7
1 - 2	28	46.6
2 - 3	19	31.7
>3	09	15.0
Total	60	100

The above table shows that out of total number of cases studied (n=60), the maximum number of patients (46.6%) were presenting their clinical features within one to two weeks of onset.

Table 3: Showing Rural and Urban Indweller Distribution of Cases under Study (n=60)

Area	No of Cases	Percentage (%)
Rural	47	78.3
Urban	13	21.7
Total	60	100

The above table shows that maximum number of cases were from rural areas (78.3 %) than urban areas (21.7%).

Table 4: Showing Symptoms Presented by Patients under Study (n=60)

Symptoms	No. Of The Patients	Percentage (%)
1. Fever with or without chill(>38.5°C)	57	95.0
2.Pain Abdomen/Right Lower/Chest Pain	58	96.7
3. Loss of Appetite	23	38.3
4. Nausea/Vomiting	31	51.7
5. Cough	11	18.3
6. Dyspnea	08	13.3
7. Diarrhoea/Dysentery	02	3.3

The above table shows that pain abdomen and fever were most common presentation seen in 96.7% and 95% of patients respectively. Loss of appetite, nausea/vomiting, cough, dyspnea and diarrhea/dysentery were less common symptom.

Table 5: Showing Laboratory Findings of Cases under Studied (n=60)

Lab Parameters	Normal Values	Medians	Range
1.Hemoglobin	Male -13-16 gm % Female -11-13 gm %	14.1 gm % 10.6 gm %	(9.6-15.6) gm % (8.5 – 11.9) gm%
2. Polymorphonuclear	45-75 %	81 %	(63-95) %
3.WBC Count	4,500 -11,000 / cumm	14,100/ cumm	(9600-27,800 / cumm)
Biochemical Investigation			
4. Serum Bilirubin.	<1 mg/dl	1.8 mg/dl	(0.5-3.6) mg/dl
5. SGPT	< 53 IU/L	127 IU/L	(58-896) IU/L
6. Alkaline Phosphatase	< 110 IU/L	412 IU/L	(320-1180) IU/L
7.Serum Albumin.	3.2-4.5 gm/dl	3.6 gm/dl	(2.0-4.0) gm/dl
8.Serum Urea	14 – 40 mg/dl	35.0 mg/dl	(22.0- 39) mg/dl
Microbiological Investigation			
. Routine Examination of Stool for <i>E.Histolytica</i>		Positive in 04 cases	
10. HIV I andII		Negative in all cases	

Table 6: Showing Serological Tests For *E. Histolytica* of all Cases under Study(n=60).

Diagnostic Test	Findings	No of Patients	Percentage (%)
Serological investigation of <i>E. Histolytica</i>	Positive	52	86.7
Serological investigation of <i>E. Histolytica</i>	Negative	08	13.3

The above table shows that among the 60 cases under studied, 86.7% of patients had positive serological tests for *Entamoeba histolytica*.

Table 7: Showing Diameters of Abscess under Ultrasonogram of Patients under Study(n=60)

USG	No. of patients	Percentage
Size Upto 10 cm	53	88.3%
Size >10 cm	07	11.7%

The above table shows that about 88.3% of patients had upto 10 cm size diameter of abscess while 11.7% of patients had >10 cm size abscess.

Table 8: Showing the Site of involvement and number of Abscess in cases under study(n=60)

Site of involvement	USG Finding	
	No of Patients	Percentage (%)
Right Lobe	47	78.3
Left Lobe	04	6.7
Right Lobe + Left Lobe	09	15.0
Number of Abscess	No of Patients	Percentage (%)
Single	44	73.3
Multiple	16	26.7

Above table shows that the most common site involved was right lobe of the liver which were seen in 78.3% of patients. Isolated left lobe abscess were present in three cases and abscess in both lobe were seen in six cases. 73.3% of patients had single abscess where 26.7% had multiple

Table 9: Showing Culture of Drained Fluid in Patients under Study (n=36)

Organism Isolated	No of Patients
1. <i>Escherichia coli</i>	03
2. <i>Bacteroides spp.</i>	02
3. <i>Peptostreptococcus spp.</i>	01
4. <i>Enterobacter aerogens</i>	01
5. <i>Proteus spp.</i>	01
6. <i>Staphylococcus aureus</i>	07
7. <i>Clostridium spp.</i>	01
8. Sterile	20

The above table shows that among 36 patients in which USG guided percutaneous needle aspiration were done for diagnostic and therapeutic purpose, 13 cases were culture-positive. *Escherichia coli* in 3 cases, *Staphylococcus aureus* in 7 cases and *Enterococcus spp.* in 1 cases were present

DISCUSSION

A total of 60 adult cases of hepatic abscess were selected from amongst the patients reported or admitted in the department of Medicine at M.G.M. Medical College and L.S.K. Hospital, Kishanganj, Bihar. They were evaluated for detailed clinical history, thorough clinical examination, radiological and laboratory findings and clinical response after treatment. It shows that maximum cases were in 31-40 years age group (51.7%) and number of males was more than females. 13.3 % and 20 % of cases were in the age group of 21-30 years and 41-50 years respectively. Among the patients, male was 85% and female was 15 %. Ravdin JL *et al* (1995)¹³ had found that among 230 cases of amoebic liver abscess, most of them were in the age group of twenty to fifty years and male was more common than female. Maltz *et al* (1991)¹⁴ had observed that liver abscesses were 7 to 10 times more common in adult men. Mohsen AH *et al* (2002) had retrospectively reviewed the records of 270 adults with liver abscess in which 92% of cases were male and 8% of cases were female. The maximum number of patients were in the age group of 20-50 years. Lodhi S *et al* in (2004)¹⁵ had studied on 577 adults with liver abscess in which males were more common than female and most of them were younger age group. The observations in this study were with similar trends to other reported cases we found it from. It shows that out of total number of cases studied (n=60), the maximum number of patients (46.6%) were presenting their clinical features within one to two weeks of onset. 31.7 % of the cases had symptoms for two to three weeks. Salles JM *et al* (2003) had studied on patients with liver abscess. They had found that most of them presented as an acute illness (within two weeks). Khanna S *et al* (2005)¹⁶ had published their data in Eur J Clin Microbial Infect Dis. We shows that maximum number of cases belonged to rural areas (78.3%). The number of cases coming from urban areas was less (21.7 %). This data suggests that these diseases are more prevalent in those areas where sanitation is poor. Study

shows that pain abdomen and fever were most common presentation seen in 96.7% and 95% of patients respectively. Loss of appetite (38.3%), nausea/vomiting (51.7%), cough (18.3%), dyspnea (13.3%) and diarrhea/dysentery (3.3%) were less common symptoms. Knobloch *et al* (1983) had analysed 216 cases in which they found that pain abdomen in upper quadrant (97.5%) and fever (92.2%) are the cardinal symptoms. Khanna S *et al* (2005) studied in patients with amoebic liver abscess in which pain abdomen was the earliest and most frequent complaint, present in almost 100% of the patients. The observations of this study were similar to Knobloch *et al* (1983) study. present study raised temperature (>98.6°F) and local tenderness were most common physical signs seen in 95 % and 85 % of patients respectively where hepatomegaly (86.7 %) , icterus (20 %), rales (8.3 %), shifting dullness (3.3 %) were less common among them. According to Monson' Tropical Disease (21st ed, pg-1379), fever presents in most cases and localized tenderness at the lower right intercostals spaces, is frequent even in the absence of diffuse liver pain. According to Harrison's internal medicine(17th ed,pg-811), only 50 % of patients with liver abscesses, have hepatomegaly, right-upper-quadrant tenderness, or jaundice; thus, half of patients have no symptoms or sign to direct attention to the liver. Khanna *et al* (2007) in Gastroenterology today reported the presence of jaundice in 5 to 30 % of patients, diarrhoea in 2% of cases. Sarda AK *et al* (1998)¹⁷ also reported the similar trends in their study. Our data shows that majority of cases 42/60 had leukocytosis (median -14,100) but 18 cases had white blood cells count within normal limit. Polymorphnuclear cells (median-81%) were predominately present. Abnormally high alkaline phosphatase were seen in 82 % of cases. Katzenstein *et al* suggested that the value of alkaline phosphatase is correlated with duration of disease. The SGPT level [median-127] were mildly elevated.. Routine examinations of stool for *E. histolytica* were positive in 4 cases. All cases were HIV-negative.

Serum creatinin levels were within normal range in all cases. Fang *et al* (1999)²⁵ have reported in a study that invasive amoebiasis is an emerging parasitic disease in patients infected with HIV in an area endemic for amoebic infection. Fortunately no single case was HIV +ve in the present study. Qin *et al* (2000)¹⁹ in clinical analysis of 36 patients with amoebic liver abscess retrospectively had seen leukocytosis in 61.1% of patients and increased of ESR in 88.5% (23/28). The observations in this study were near to other studies. It shows that among the 60 cases under study, 86.7 % of patients had positive serological tests for *Entamoeba histolytica*. Qin SL *et al* (2000) studied in 36 cases with amoebic liver abscess and noted that 92.6% of cases had positive serologies against *Entamoeba histolytica*. Shyam Mathur *et al* (2002)²⁰ in prospective study they performed serological test in 82 patients, out of which 79 (96%) were detected positive. Stanley SL Jr *et al* (1998)²¹ observed in longitudinal study of the antibody response to recombinant *Entamoeba histolytica* antigens in patients with amoebic liver abscess. Their results showed the similar trends. shows that the study, all patients (100%) were toddy abusers. 11 cases of them were also alcoholic. There is no documented evidence which may show an association of toddy with amoebic liver abscess. The growth of *E. histolytica* requires in cultures the presence of starch or rice flour and some metabolic associates, such as enteric bacteria, organisms (non pathogenic bacterium) or the parasitic flagellate *T. cruzi*, living or dead. [K.D.Chaterjee's parasitology, 12th ed., It supposed that toddy might be the good culture media for *Entamoeba histolytica*. revealed that about 88.3 % of patients had upto 10 cm size diameter of abscess while 11.7% of patients had larger size (>10 cm) abscess measured by ultrasonogram. We showed that the most common site involved was the right lobe of the liver (78.3%). 15 % of cases presented involvement of both right and left lobe. 6.7% patients had isolated left lobe abscess. 73.3 % of patients had single abscess where 26.7% had multiple lesions Sharma MP *et al* (1993)^[22] in Trop Gastroenterol have reported multiple abscess in 0 to 16% of cases. Khanna *et al* (2007) in Gastroenterol Today reported the presence of multiple liver abscess in 40/144 (27.7%) of patients, which was higher than previously reported. Maneschy *et al* (1974) observed that left lobe abscess is usually seen along with a right lobe abscess. Isolated left lobe abscess can be present in 16% of patients with amoebic liver abscess. The same trends were also seen in this study. We have found showed that among 36 patients in which USG guided percutaneous needle aspiration were done for diagnostic and therapeutic purpose, 15 cases were culture-positive. *Escherichia coli* in 3 cases, *Staphylococcus aureus* in 7

cases, *Bacteroides* spp. in 2 cases, *Peptostreptococcus* spp in 1 case, *Proteus* spp. in 1 case, *Enterobacter* spp. in 1 case and *Clostridium* spp. in 1 case were present. Culture of remaining cases was sterile but recovery was fast after drainage. In a study by Rani R *et al* (2006)²³, they demonstrated the presence of two anaerobic genera, viz. *Bacteroides* and *Peptostreptococcus*, in ALA pus sample, and this observation was unprecedented and the clinical significance was not known. Hanna *et al*²⁴ (2000) reported in his study of drug resistant ALA that when percutaneous drainage is combined with antiamebic therapy, it expedites the recovery and it is also curative in such cases.

CONCLUSION

All the patients were toddy abusers. It suggests an association with amoebic liver abscess. 11 of them were alcoholic too. Involvement of right lobe of liver and single abscess were most common ultrasonographic findings. There was also increasing incidence of multiple liver abscess. Isolated left lobe abscess were seen in 4 cases. Out of 60 patient, 36 patient were undergone USG guided percutaneous needle aspiration. Recovery was fast in non-responder. In liver abscess, *E.coli*, *Bacteroides*, *Peptostreptococcus*, *Proteus* etc, were common pathogens isolated from drained pus. Budd-chiari syndrome was complication seen in 4 cases. It subsided after drainage of pus. Pleuropulmonary rupture in one case and peritoneal rupture in one case were also seen. There was no mortality. Prognosis was better. It was due to early diagnosis of the diseases and early intervention.

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