

Clinical Profile Of Patients With Amoebic Liver Abscess In A Tertiary Care Hospital

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Abstract

Introduction: The liver is the organ most prone to abscess formation. Amoebic liver abscess a major health and socioeconomic problem in many parts of Africa, Asia, and Latin America.⁵ Amoebiasis is a common tropical disease characterized by dysentery caused by *Entamoeba histolytica* contamination of foods and water. Amoebic dysentery may occasionally complicate and create an abscess in the liver, resulting in an amoebic liver abscess.¹² The diagnosis of amoebic liver abscess is based on clinical suspicion, laboratory findings, serologic tests, and a hepatic imaging examination. In only half of the cases, the protozoon is separated from the faeces.^{13,14,17}

Aim of the study: The aim of this cross-sectional study was to assess the clinical profile of liver abscess in patients attending a tertiary referral hospital.

Methods: This cross-sectional type of descriptive study was carried out from January 2010 to July 2010 at Rajshahi Medical College Hospital, Rajshahi, Bangladesh. . We recruited 73 patients between the ages of 14 and 55, both male and female, for the cross-sectional study. Clinically detected and confirmed cases of amoebic liver abscess were chosen for this study. Socioeconomic status was ascertained by monthly income.

Result: The youngest patient in the present study was 14 years old and the oldest patient was aged 55 years. Maximum incidence in age group of 25-34 years. Pain in the right upper abdomen was the most common symptoms at presentation 68 (93.15%), Tender hepatomegaly present in 68 (93.15%) patients and was the most common sign, Hemoglobin decreased (<10 gm%) in 51 (69.86%) patients, Alkaline phosphatase (>90U/L) increased in 49 (67.12%) patients, Right dome of diaphragm was elevated in 31 (42.47%) patients, In 61 (83.56%) patients an abscess was found in the right lobe, whereas in 10 (13.70%) patients the left lobe was involved. In naked eye examination colours of 34 (46.58%) cases were chocolate, trophozoite of *E. histolytica* were detected in 28 (38.36%), Spot Elisa (Rapid test) was positive in all 73 patients.

Conclusion: Even though seroprevalence of ALA has been shown to be on the decline, it is still the most common cause of liver abscess in patients. It is expected that the outcomes of this study would raise clinical awareness of the clinical signs and early detection of amoebic liver abscess.

Key words: Amoebic Liver Abscess, Predisposing Factors, Patient Demographics, Alcoholism

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I. Introduction

The liver is the organ most prone to abscess formation. Liver abscesses accounted for 13% of all abscesses and 48% of all visceral abscesses.¹ *Entamoeba histolytica* infects 10% of the world's population,² with an incidence topping 30% in tropical and subtropical regions.³ Amoebic liver abscess is the most prevalent extraintestinal manifestation of *Entamoeba histolytica* infection⁴ and a major health and socioeconomic problem in many parts of Africa, Asia, and Latin America.⁵ Despite a 14.8% decline in amoebiasis mortality over a decade,⁶ the number of people infected has risen to 500 million worldwide.⁷ Amoebic liver abscess is very common in the Indian subcontinent.^{8,9,10} Available epidemiologic research on *Entamoeba histolytica* shows that infection rates may still be as high as 55% in endemic countries like Bangladesh, despite symptomatic infection rates being less than half that figure.¹¹ Amoebiasis is a common tropical disease characterized by dysentery caused by *Entamoeba*

histolytica contamination of foods and water. Amoebic dysentery may occasionally complicate and create an abscess in the liver, resulting in an amoebic liver abscess.¹²

Patients with amoebic liver abscess present with abdominal pain that is well localized to the right hypochondrium. Fever is usually always present, however it can be intermittent and sometimes appears as fever of unclear aetiology. Malaise, myalgia, and arthralgia are common symptoms. Jaundice is unusual and indicates a poor prognosis.^{13,14,15,16} The diagnosis of amoebic liver abscess is based on clinical suspicion, laboratory findings, serologic tests, and a hepatic imaging examination. In only half of the cases, the protozoon is separated from the faeces.^{13,14,17} Amoebic liver abscess is most typically found in the right lobe, usually as a solitary mass near the diaphragm.^{17,18,19,20} Ultrasonography is the preferred procedure for diagnosing a liver abscess. ALA should be confirmed by microscopic examination of pus for amoebic trophozoites and confirmation of serum anti-amoebic IgG antibody by Enzyme Linked Immunosorbent Assay (ELISA). Although the presence of amoebic trophozoites in aspirated pus is confirmatory for ALA, it is not a sensitive method of diagnosis. As a result, identification of serum anti-amoebic antibody is the most commonly used method for its diagnosis. The aim of this cross-sectional study was to assess the clinical profile of liver abscess in patients attending a tertiary referral hospital.

II. Objectives

The aim of this cross-sectional study was to assess the clinical profile of liver abscess in patients attending a tertiary care hospital.

III. Methodology & Materials

This cross-sectional type of descriptive study was carried out from January 2010 to July 2010 at Rajshahi Medical College Hospital, Rajshahi, Bangladesh. We recruited 73 patients between the ages of 14 and 55, both male and female, for the cross-sectional study. Clinically detected and confirmed cases of amoebic liver abscess were chosen for this study. Socioeconomic status was ascertained by monthly income. Patients who had a monthly income of less than 3,000 taka were considered to be in the low-income group. Monthly income between 3,000 and 20,000 taka was considered the middle income group, and monthly income above 20,000 taka was considered the high income group.²¹ Every patient was asked for informed consent. They were informed about the procedure and study goal and also about the purpose of research. Informed consent was obtained from the patients in order to collect clinical information. They were also informed that they are free to refuse participate. Complete data collection form was kept by the principal investigator to which no one would have any access. A predesigned questionnaire was supplied to every amoebic liver abscess patient. Data was collected by face-to-face interviews, physical examinations, and laboratory investigations in a pre-tested questionnaire form or data collection sheet after obtaining the informed consent of the patient. Data was analyzed with the help of SPSS-21 and Microsoft.

IV. Result

This study was carried out among the 73 amoebic liver abscess patients of Rajshahi Medical College Hospital in a year period from January 2010 to December 2010 to observe some common factors associated with amoebic liver abscess. This year, 127 liver abscess patients were examined and investigated. Among them, 73 patients fulfilled inclusion and exclusion criteria. Figure 1 shows the age distribution of the study population. The study population was divided into four different age groups: viz. 14-24 years, 25-34 years, 35-44 years, and 45-55 years. 29 (39.73%) of the patients in the study were between the ages of 25 and 34. Table 1 shows the clinical profile of ALA patients, which includes signs, symptoms, and laboratory and radiological findings. Pain in the right upper abdomen was the most common symptoms at presentation 68 (93.15%) followed by fever 63 (86.30%), weight loss 51 (69.86%), anorexia 39 (53.42%), cough 12 (16.44%) and diarrhea 10 (13.70%) patients. Among the sign, tender hepatomegaly present in 68 (93.15%) patients and was the most common sign followed by raised temperature 63 (86.30%), anaemia 51 (69.86%) and jaundice 5 (6.85%) patients. WBC count was increased ($>11000/\text{mm}^3$) in 49 (67.12%) patients, ESR was raised (>20 mm in 1st hour) in 32 (43.84%) patients, hemoglobin decreased (<10 gm%) in 51 (69.86%) patients, Alkaline phosphatase (>90 U/L) increased in 49 (67.12%) patients, ALT (>40 U/L) in 21 (28.77%) patients while total bilirubin was raised (>2 mg%) in 10 (13.70%) patients. All patients PPBS and CUS was within normal limit (<12 mmol/l). X-ray chest P/A view revealed right dome of diaphragm was elevated in 31 (42.47%) patients and 5 (6.85%) patients developed right sided pleural effusion. On ultrasound examination, single abscess was seen in 53 (72.60%) and multiple abscesses was seen in 20 (27.40%) patients. In 61 (83.56%) patients an abscess was found in the right lobe, whereas in 10 (13.70%) patients the left lobe was involved. In 2 (2.74%) patients both lobes were involved. In Table 2, In naked eye examination colours of 34 (46.58%) cases were chocolate, 26 (35.62%) cases were yellow and in the rest 13 (17.81%) cases it was brown. Table 3 shows the rate of microscopic detection of trophozoite of *E. histolytica*. Under wet film microscopy out of 73 ALA cases, trophozoite of *E. histolytica* were detected in 28 (38.36%) and remaining 45 (61.64%) were found negative. Culture of pus for *E. histolytica* in LY media was positive in 4(5.48%) patients.

In these 73 cases microbial culture (MacConkey's agar media) was negative. Spot Elisa (Rapid test) was positive in all 73 patients.

Figure-1 : Age distribution of patients with ALA (N=73)

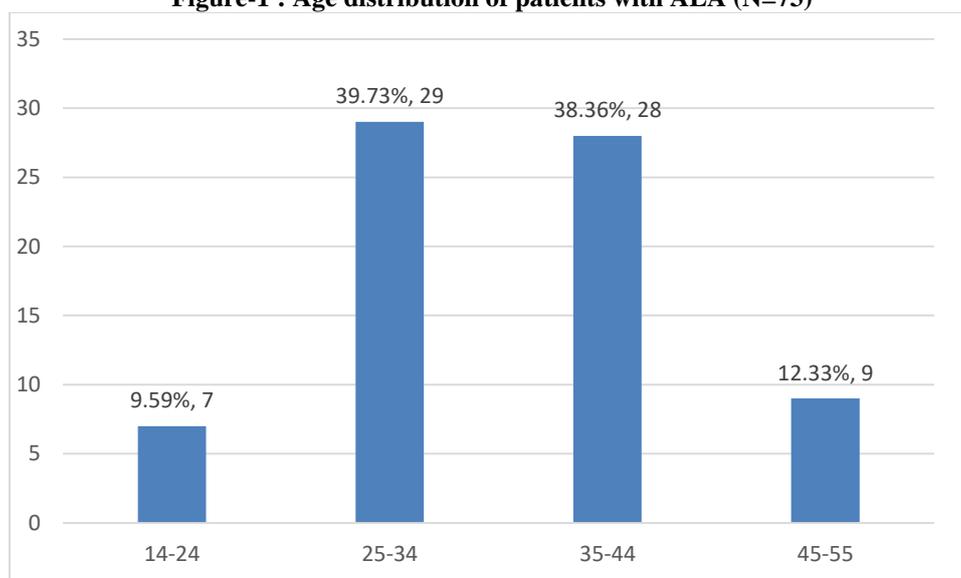


Table-1 : Clinical, laboratory and radiological profile of patients with ALA (N=73)

Parameters		No. of patients	Percentage (%)
Symptoms	Right upper abdominal pain	68	93.15
	Fever	63	86.30
	Weight loss	51	69.86
	Anorexia	39	53.42
	Cough	12	16.44
	Diarrhea	10	13.70
Signs	Tender hepatomegaly	68	93.15
	Raised temperature	63	86.30
	Anaemia	51	69.86
	Jaundice	5	6.85
Laboratory results	WBC counts >11000/mm ³	49	67.12
	Hemoglobin <10 gm%	51	69.86
	ESR >20 mm in 1st hour	32	43.84
	Alkaline phosphatase >90 U/L	49	67.12
	ALT >40 U/L	21	28.77
	Total bilirubin >2 mg%	10	13.70
X-ray chest	Right hemi diaphragm elevation	31	42.47
	Right pleural effusion	5	6.85
	Normal	42	57.53
Ultrasonographic findings	Solitary Abscesses	53	72.60
	Multiple	20	27.40
	Right Lobe	61	83.56
	Left Lobe	10	13.70
	Both Lobe	2	2.74

Table-2: Colour of pus of ALA patients (N=73)

Colour	No. of patients	Percentage (%)
Chocolate	34	46.58
Yellow	26	35.62
Brown	13	17.81
Total	73	100.00

Table-3 : Wet film microscopy and Culture of pus for trophozoite of *Entamoeba histolytica* of ALA patients (N=73)

Microscopy		Culture of <i>E. histolytica</i>	
Positive	Negative	Yield growth	Negative
N(%)	N(%)	N(%)	N(%)
28(38.36%)	45(61.64%)	4(5.48%)	68(93.15%)

Figure-2 : Trophozoite of *E. histolytica* in wet film microscopy (N=73)

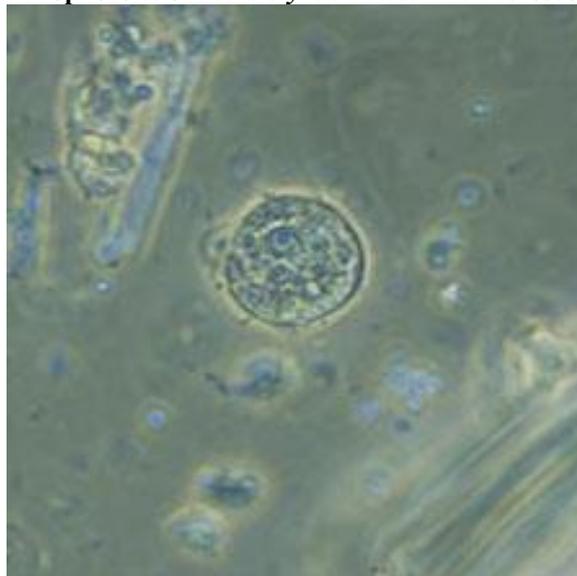


Figure-3 : Trophozoite of *E. histolytica* in wet film microscopy (N=73)

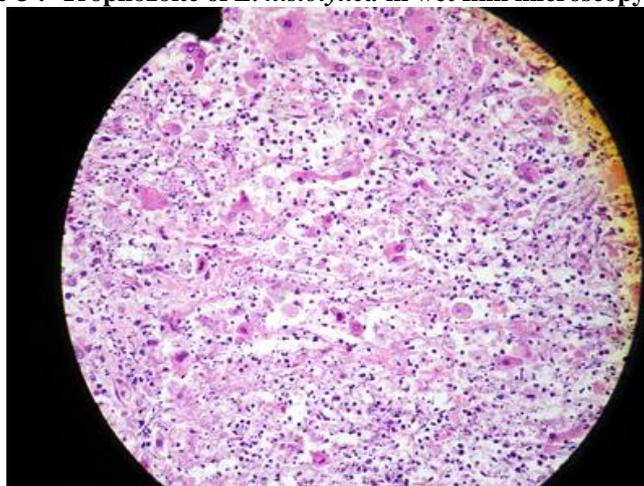


Figure-4 : Cultured *Entamoeba histolytica* trophozoite in LY media (N=73)



V. Discussion

According to the WHO, *Entamoeba histolytica* causes 50 million cases and 100,000 deaths each year, making it the second-greatest cause of death from protozoal illnesses.^{4,22,23,24} Although *E. histolytica* infection occurs worldwide, liver abscess is the most prevalent extra-intestinal consequence, affecting 3% to 9% of individuals.^{4,22} Amoebic liver abscess is usually easy to diagnose based on clinical, epidemiological, serological, and ultrasonographic findings.

The objective of this study was to explore the demographic and predisposing factors of patients with amoebic liver abscess.

In our study, 73 patients were included; among them, a larger number were found in the age group of 25-34 years, and they were 39.73%. Khan et al.²⁵ showed the peak age of onset between 21-50 years, which was similar to ours. Our study was also similar to the studies of Hold Stock et al.²⁶, Soomro et al.²⁷, Aptekar et al. 1970²⁸, Raghavan et al. 1961²⁹, Kapoor et al. 1972³⁰, and Mirajkar AR et al. 2018¹². They showed a peak age of onset between 20-45 years and were 40%.

The most common symptom was upper abdominal pain (93.2%), tender hepatomegaly was the most common sign (93.2%) as reported by other workers^{8,9}. Incidence of fever varied from 19.4% to 89.47% in different studies^{8, 9,31}. Pain (93.2%) and fever (86.3%) were the most common presenting features in this report. These findings in a young man from a low-income family should raise the possibility of an amoebic liver abscess.³² Our study was similar to the study by Paik B et al. 2016 where these two symptoms of fever and pain abdomen occurred in 94% and 90% respectively.³³ Also in another study by international journal of scientific research, where 90% patients with amoebic abscess were more acutely ill with fever + upper abdominal pain.³⁴

We found anorexia, weight loss, cough and diarrhea were 39 (53.4%), 50 (69.9%) 12 (16.4%) and 10 (13.7%) respectively which correlate with the study of Siddiqui et al³⁵ except abdominal pain, where they showed fever 89.47%, upper abdominal pain 78.94%, anorexia 78.94%, weight loss 73.68%, diarrhea 15.78% and cough 15.78%. In another study by international journal of scientific research where these two symptoms of fever and pain abdomen occurred in 94% and 90% respectively.³⁴ Also in the same study by international journal of scientific research, these two symptoms of anorexia and cough occurred in 90% and 10% respectively.

In accordance with earlier research in this investigation,^{36,37} 62 (86.1%) of the 73 ALA cases had no history of diarrhea or dysentery during the 6 months before to hospitalization, confirming the notion that the lack of a previous history of diarrhea or dysentery does not rule out amoebic liver abscess. Some medications are widely available in Bangladesh, as they are in many underdeveloped nations. When a person experiences loose motion for any cause, it is typical for the general population to take metronidazole. Most patients discontinue taking medicines after their acute symptoms have improved and do not complete the course. As a result, symptoms are hidden, and people may forget about modest symptoms after a few weeks. This could explain why there was no prior history of intestinal amoebiasis during the examination.

In the current study, 93.2% of the ALA patients showed an enlarged and painful liver, which is a common symptom of ALA mentioned by most researchers.^{36,38} Other clinical symptoms were anaemia (69.9%), fever (86.3%), and jaundice (6.8%). Similar results were obtained with little variation in Pakistan³⁹ and Iraq.⁴⁰ Severe

sickness, a big abscess compressing the porta hepatis, sepsis, cholestasis, or abscess-biliary communication have all been linked to jaundice.⁴¹

In this study, 49 (67.1%) ALA cases had a total WBC count of more than 11,000 per mm³ of blood. This is consistent with the findings of other researchers, who found leukocytosis to be a prevalent characteristic in ALA patients.^{18,36} Another study found that leukocytosis occurs in the early stages of amoebiasis, and as the disease develops to chronic, the leukocyte count gradually decreases, sometimes leading to leukopenia.³⁷ In our investigation, 24 (32.9%) of the ALA cases had a total WBC count ranging from 4000 to 11,000 per mm³ of blood. This could be because the majority of the patients were from low socioeconomic backgrounds and were malnourished, which could have an impact on leukocyte response. Thus, it can be inferred that if other features are present, a normal leukocyte count does not exclude clinical suspicion of ALA. ESR increased (>20mm 1st hour) in 32 (43.8%) patients which was similar to the study from Pakistan³⁹.

The majority of the patients in this study had normal liver function tests, with the exception of the alkaline phosphatase level, which was found to be elevated in 49 (67.1%) ALA cases. This finding was consistent with the findings of Shamsuzzaman et al³⁶ and Soomoro et al.⁴²

The x-ray chest PA view findings, somewhat similar results from Pakistan.^{39,43}

Abdominal ultrasonography is safe, economical, and easily available, but it is observer-dependent. The sensitivity of US is nearly 92 to 97%⁴⁴. However, US features of ALA and other space-occupying lesions of the liver, e.g., hepatoma, pyogenic liver abscess, etc., may overlap. The combination of US findings with clinical features and aspirate analysis increases its sensitivity.⁴⁴ Therefore, in an endemic area, a patient with lower chest and upper abdominal symptoms with a space occupying lesion should raise the suspicion of ALA. Ultrasound provides valuable, high precision information on the location, size and number of ALA as well as the detection of established and possible imminent complications. We used ultrasound (in addition to the above) to guide diagnostic and therapeutic aspiration. Sonographically, in ALA 4%-42% cases have multiple abscesses, 20%-35% have an abscess in the left lobe, and the remaining 49%-80% have a solitary abscess in the right lobe.^{36,37} Our study showed multiple abscesses in 27.4% cases and single abscess in 72.6% of cases. In 61 (83.6%) patients an abscess was found in the right lobe, whereas in 10 (13.7%) patients the left lobe was involved. In 2 (2.7%) patients both lobes were involved. These findings were similar to those of Bukhari et al⁴⁵ and Paik B et al.³³

Liver abscess was aspirated, and pus was examined by naked eye, microscopy for the trophozoite of *Entamoeba histolytica*, and culture for *Entamoeba histolytica*. In this study, In naked eye examination, colour of 34 (46.6%) cases were chocolate, 26 (35.6%) cases were yellow, and in the rest 13 (17.8%) cases, it was brown.

Out of 73 cases, wet preparation of microscopy revealed only 28 (38.4%) active motile trophozoites of *E. histolytica* in the abscess pus specimen, and the remaining 45 (61.6%) were found negative. This finding is similar to previous studies published earlier.⁴⁶ Findings of motile trophozoite in *E. histolytica* are very difficult. Because it requires the correct area of collection (the base of the ulcer) and also because of the short viability of *E. histolytica*, this is another limiting factor. Microscopic detection also needs rapid processing of the samples, which is often misleading with macrophages and many living cells of liver abscess pus. For these reasons, a skilled person is required for the correct identification of the parasite.

We have also performed culture of *E. histolytica* in LY medium. Which yields growth of only 4 cases out of 73 cultures. These culture findings are also comparable to those of other investigators.⁴⁷ All patients spot ELISA were positive.

Limitations of the study

This cross-sectional study was performed on small group of people, which is too small to represent the burden of liver abscess in the community. Higher number of sample size could give better information. For diagnosis of amoebic liver abscess we used microscopy, culture and spot ELISA test but we could not do other test like gel diffusion precipitation test or indirect haemagglutination test. Data was collected from patients of Rajshahi Medical College Hospital. If samples were collected from the patients of different hospital that may give more precise information. Therefore, in future further study may be under taken with large sample size.

VI. Conclusion

Even though seroprevalence of ALA has been shown to be on the decline, it is still the most common cause of liver abscess in patients. Percutaneous needle aspiration and conservative care with metronidazole are both efficacious and authorised as therapeutic methods. In this study Pain in right upper abdomen, associated with fever was the most common presenting complaint. Tender hepatomegaly associated with raised temperature was the most common findings in physical examination. It is expected that the outcomes of this study would raise clinical awareness of the clinical signs and early detection of amoebic liver abscess.

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