



Lifestyle of the Patients Suffering from Amoebic Liver Abscess: A Hospital Based Study

Debashis Biswas^{1*}, A.T.M. Abdullahel Kafi², Md. Shahjad Selim³, Md. Abdullah-Al-Sayeeef⁴, Md. Moklesur Rahman⁵, Md. Shafiuzzaman⁶

¹Assistant Professor, Department of Medicine, Magura Medical College, Magura, Bangladesh

Email: dr.debu79@gmail.com,

Orcid ID: 0009-0001-7955-7279

²Associate Professor & Head, Department of Community Medicine, Magura Medical College, Magura, Bangladesh

Email: drkafi65@gmail.com,

Orcid ID: 0009-0001-4471-9952

³Associate Professor, Department of ENT, Magura Medical College, Magura, Bangladesh,

Email: shahjadselim@gmail.com,

Orcid ID: 0009-0009-2398-7593

⁴Assistant Professor, Department of Anatomy, Magura Medical College, Magura, Bangladesh,

Email: rushosayeeef@gmail.com,

Orcid ID: 0000-0002-8039-7874

⁵Assistant Professor (cc), Department of Pharmacology and Therapeutics, Magura Medical College, Magura, Bangladesh,

Email: mrpalash3005@gmail.com,

Orcid ID: 0009-0002-8448-581X

⁶Assistant Professor, Department of Ophthalmology, Magura Medical College, Magura, Bangladesh,

Email: sumonrnc39@gmail.com,

Orcid ID: 0009-0003-1655-2651

*Corresponding author

Received: 10 August 2023

Revised: 08 September 2023

Accepted: 20 September 2023

Published: 31 October 2023

Abstract

Background: The liver is the organ most subject to the development of abscess. Liver abscess made up to 13% of the total number of abscesses or 48% of all visceral abscesses. 10% of the world's population is chronically infected with Entamoeba histolytica, with an incidence exceeding 30% in tropical and subtropical regions. The aim of this study was to describe the lifestyle of the patients suffering from amoebic liver abscess. **Material & Methods:** This was a cross-sectional type of descriptive study and conducted in the Rajshahi Medical College Hospital during the period of January 2010 to December 2010. In our study, we included 73 patients between the age of 14 years to 55 years both male and female. Clinically detected and confirmed cases of amoebic liver abscess. Socioeconomic status was ascertained by monthly income. Patients who had monthly income less than 3,000 taka were considered as the low income group. Monthly income between 3,000- 20,000 taka was the middle income group and monthly income above 20,000 taka was considered as the high income group. **Results:** Majority (39.7%) of our patients were aged 25-34 years old & most of our study patients were male (91.7%). The mean age was 35.3±8.71 years with a male female ratio 13.6:1. Most of our study patients (56.2%) were from rural area. Majority (57.5%) patients had education at primary level. **Conclusion:** From this study we can conclude that amoebic liver abscess is commonly seen in middle-aged alcoholics with male preponderance. It is seen most commonly in low socio economic group with poor sanitation.

Keywords:- Liver abscess, Amoebic abscess, Pyogenic, Hepatic, Liver abscess symptoms.

INTRODUCTION

The organ that is most vulnerable to an abscess developing is the liver. 48% of all visceral abscesses, or 13% of all abscesses, were liver abscesses.^[1] Amoebiasis is presently the third most common cause of death from parasitic

disease.^[2] World Health organization (WHO) has estimated that about 50,000,000 cases of invasive amoebiasis occur annually and it is among the leading causes of death due to parasitic infections.^[3] It has been suggested that higher consumption of alcohol, which may damage Kupffer's cells, could be an important

factor in the higher incidence in men.^[4] 10% of the world's population is chronically infected with *Entamoeba histolytica*,^[5] with an incidence exceeding 30% in tropical and subtropical regions.^[6] Despite our long experience with the disease, amoebiasis continues to be an international problem, and causing significant morbidity and mortality in adults.^[7] Amoebic liver abscess is the most common extra intestinal manifestation of infection by *Entamoeba histolytica*,^[8] and a major health and social problem in certain areas of Africa, Asia and Latin America.^[9] Amoebic liver abscess is widely prevalent in the Indian subcontinent.^[10,11,12] The organism during the invasive stage gains access to the liver via the portal vein where marked tissue destruction occurs resulting in a liver abscess.^[13] Available epidemiologic studies, specific for *Entamoeba histolytica*, demonstrate that infection rates may still be as high as 55% in endemic areas such as Bangladesh, although symptomatic infection rates are less than one-half that number.^[14] Patients with amoebic liver abscess manifest early with abdominal pain and fever or as fever of unknown origin, weight loss and abdominal pain. Coexisting diarrhea occurs in 30% and it is extremely rare to find amoebic trophozoites in the stool examination.^[15] Poverty facilitates infection because of deficiencies in sanitation and hygiene, suboptimal sewer systems, deficient fertilization practices, and irrigation with untreated water, all of which facilitate the ingestion of infective *Entamoeba histolytica* cysts. Studies during outbreaks have identified that interruptions in water supply, decreases in water pressure, and increased water consumption are associated with high infection rates.^[16] A recent study from a tertiary care center in North India has shown that

polymerase chain reaction is a useful diagnostic tool in demonstrating the culprit organism in pus from amoebic liver abscess.^[17] Other factors associated with enhanced transmission include cramped living conditions such as long-term institutions and prisons and male homosexuality.^[18,19] Patients who are at higher risk of fatal outcomes due to invasive amoebiasis include individuals with malnutrition, infants, pregnant and postpartum women, and patients receiving corticosteroids.^[20,21] Hai A A et al,^[22] conducted a study in India shows that alcohol is believed to be one of the predisposing factors in the pathogenesis with statistics showing a more than five-fold incidence of amoebic liver abscess among drinkers. An amoebistatic substance produced by the normal liver is depressed in alcoholics.^[23]

Objectives

General Objective: To observe the personal habits and hygiene among the patients of amoebic liver abscess.

Specific objectives:

1. To observe some selected lifestyle factors (e.g. food habit, hand washing, uses of sanitary latrine, uses of safe drinking water etc.) among the patients of amoebic liver abscess.
2. To observe the frequency of taking indigenous alcohol among the patients of amoebic liver abscess.

MATERIAL AND METHODS

This was a cross-sectional type of descriptive study and conducted in the Rajshahi Medical College Hospital during the period of January

2010 to December 2010. In our study, we included 73 patients between the age of 14 years to 55 years both male and female. Clinically detected and confirmed cases of amoebic liver abscess. Socioeconomic status was ascertained by monthly income. Patients who had monthly income less than 3,000 taka were considered as the low-income group. Monthly income between 3,000- 20,000 taka was the middle-income group and monthly income above 20,000 taka was considered as the high income group. Nutritional status was ascertained by body mass index (BMI). BMI 25-29.9 = overweight, BMI > 30 = obese. Supply water means water supplied by municipal.

Sampling Technique: A predesigned questionnaire was supplied to every amoebic liver abscess patient. Those who fulfill the inclusion and exclusion criteria were enrolled in this study.

Procedure / Data collection: Data was collected from supplied predesigned questionnaire.

Period of data collection: 12 months.

Data analysis: Data was analyzed with the help of SPSS software program and express as mean ± SD. P value < 0.05 was considered significant.

Data collection: Data was collected by face-to-face interview, physical examination & laboratory investigations in a pre-tested questionnaire form or data collection sheet after taking informed consent of the patient.

Ethical issue: 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.

RESULTS

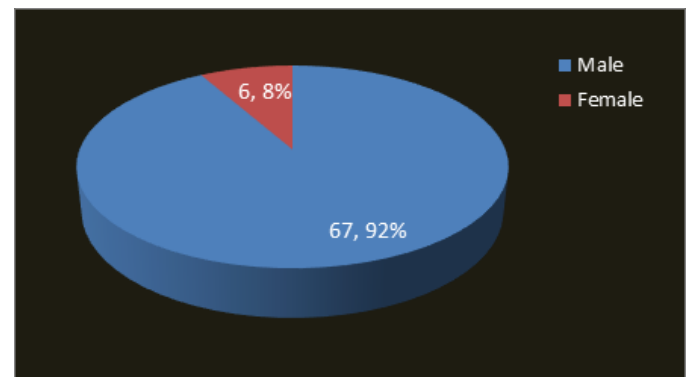


Figure 1: Age distribution of our study patients (N=73)

[Figure 1] shows most of our study patients were male 67(91.7%) compared to female 6(8.3%) with a ratio 13.6:1.

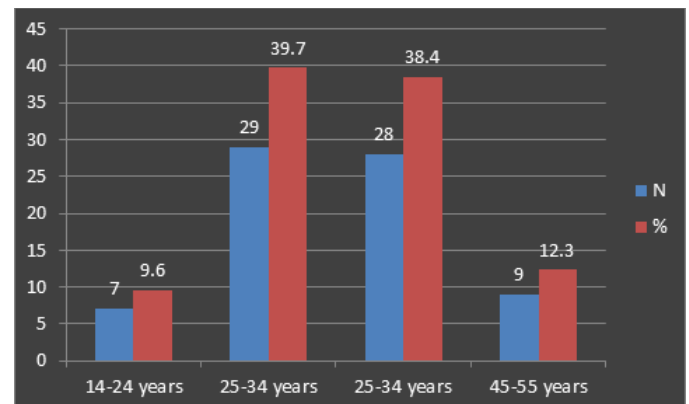


Figure 2: Gender distribution of our study participants (N=73)

[Figure 2] shows the age distribution of the study population. Study population was divided into 04 different age group viz. 14-24



years, 25-34 years, 35-44 years and 45-55 years. Among the study cases 25-34 years constituted

the highest number 29 (39.7%) of the patients. Mean age was 35.3 ± 8.71 years.

Table 1: Distribution of our study patients by residence (N=73).

Type of Area	N	%
Slum	29	39.7
Rural	41	56.2
Urban	3	4.1
Total	73	100

In [Table 1] we found the majority of the patients 41 (56.2%) came from rural area, 39.7% came from slum area and only 4.1% from urban community.

Table 2: Distribution of our study patients by occupation (N=73)

Occupation	N	%
Laborer	36	49.3
Farmer	21	28.8
Student	6	8.2
Housewife	6	8.2
Businessman	4	5.5
Total	73	100

[Table 2] shows among the 73 cases 36(49.3%) patients were laborer, 21 (28.8%) patients were farmer, 6 (8.2%) patients were student, 6 (8.2%) patients were house wife and 4 (5.5%) patients were businessmen.

Table 3: Distribution of our study patients by level of education (N=73)

Education	N	%
Illiterate	22	30.1
Up to primary school	42	57.5
Above primary school	9	12.3
Total	73	100

[Table 3] shows the level of education among our study patient. We found majority 42 (57.5%) patients had education at primary level, 9(12.3%) had S.S.C and above level and rest were illiterate.

Table 4: Distribution of our study patients by level of socioeconomic class (N=73)

Class	N	%
Lower Class	65	89
Middle Class	8	11
Total	73	100



[Table 4] shows the distribution of our study patients by level of socioeconomic class. In our study we found most 65 (89%) of the ALA patients were from low income group and the remaining 8 (11%) ALA patients were from middle income group.

Table 5: Distribution of our study patients by the frequency of alcohol intake (N=52)

Frequency	N	%
Regular	34	46.6
Occasionally	18	24.7
Total	52	71.2

[Table 5] shows the frequency of alcohol intake among our study patients. Among the 52 alcoholic patients 34 (46.6%) patients used to intake alcohol regularly and 18 (24.7%) used to intake alcohol occasionally.

Table 6: Distribution of our study patients by symptoms (N=73)

Symptoms	N	%
Abdominal Pain	68	93.2
Fever	63	86.3
Weight Loss	51	69.9
Anorexia	39	53.4
Cough	12	16.4
Diarrhea	10	13.7

[Table 6] shows the distribution of our study patients by symptoms. In our study we found pain in the right upper abdomen was the most common symptoms at presentation 68 (93.2%) followed by fever 63 (86.3%), weight loss 51 (69.9%), anorexia 39 (53.4%), cough 12 (16.4%) and diarrhea 10 (13.7%) patients.

DISCUSSION

The WHO estimates that Entamoeba histolytica causes 50 million cases and 100,000 deaths annually, making this disease the second leading cause of death from protozoal diseases.^[7,8,20,24] Although infection with E. histolytica occurs world-wide, yet, liver abscess is the most common extra intestinal complication in 3% to 9% of patients.^[7,8]

Diagnosis of amoebic liver abscess is usually straightforward on the basis of the clinical, epidemiological, serological and ultrasonographic findings.

The objective of this study was to explore the personal habits and hygiene, selected lifestyle factors (e.g. food habit, hand washing, use of sanitary latrine, use of safe drinking water etc.), frequency taking indigenous alcohols, demographic profile, common clinical profile of the patients of amoebic liver abscess. In our study 73 patients were included among them larger case were found in age group of 25-34 years and they were 39.7%. Males were predominant 67 (91.8%) than females 6(8.2%). Khan et al,^[25] showed the peak age of onset between 21-50 years, which was similar to us.

Our study was also similar to the study of Hold Stock et al,^[26] Mahdi et al.^[27] They showed the peak age of onset between 20-45 years and were 40%, male were 92% and female 8%. Another study of Makkar et al,^[28] shown that male were 95% and female 5%. Out of 73 patients 22 (30.1%) were illiterate, 42 (57.5%) educated up to primary school and 9 (12.3%) educated more than primary school. Our study was in accordance with the study of Soomoro et al,^[29] and they showed that 70% had education at primary level or above while the rest were illiterate.

Majority of the patients 36(49.3%) were laborer. Famers were 21(28.8%), Housewife 6 (8.2%), students 6 (8.2%) and businessmen 4 (5.5%). Siddique et al,^[30] showed that in their study laborer were 43.76%, Famer 26.31%, Businessman 5.26%, Student 10.52% and housewife 10.52%. This result was similar to our study.

In the present study, none was from high income group and the rate of infection was significantly high in low-income group than middle income group. Here we showed 65(89%) patients were from low socioeconomic group and 8(11%) from middle class group. These findings were in accordance with other studies carried out elsewhere in the world showing higher incidence of amoebic infection among the low socioeconomic group where malnutrition, poor hygiene, poor sanitary condition, contaminated drinking water and ignorant are important contributing factors.^[31] Shamsuzzaman et al,^[32] showed 93.5% were from low socioeconomic class and 6.5% from middle class. Also the prevalence of *E. histolytica* infection is highest among the lower socioeconomic group even in temperate

developed countries.^[31] Soomoro et al,^[29] showed that 48% of patients came from slum area, 28% from semi urban, 23% from urban area and their housing condition were 56% used concrete house and 44% used mud house.

Out of total 73 cases 52 (71.2%) were alcoholic and 21 (28.8%) were non-alcoholic. Among 52 alcoholic patients 31(42.5%) consumed fermented rice, 18 (24.7%) consumed palm juice and 3 (4.1%) patients consumed brand alcohol. This is similar to Makkar et al,^[28] study where 70% were alcoholic and 30% were non-alcoholic.

Hai et al,^[22] in his review of 220 amoebic liver abscess cases has suggested that drinkers of today (a type of country liquor made from fermented palm juice) become susceptible because of the large dose of *E. histolytica* ingested with the drink. But this seems unlikely, as ALA seems to be common in alcoholics irrespective of the type of alcohol used, as was seen in our study, in which among the alcoholics 4.1% consumed brand alcohol. A more plausible explanation is that chronic alcohol consumption causes some metabolic or immune changes in the liver which facilitate the invasion and colonization of the liver by the amoeba.

Some author,^[28] showed that it is not alcohol but the increased liver iron due to regular alcohol consumption that increases the susceptibility to ALA in alcoholics by providing an ideal breeding ground for the growth of *E. histolytica*. Their observation was that *E. histolytica* fails to grow without the addition of exogenous iron to the culture medium, despite the presence of enough endogenous iron in the medium supplied by peptones and serum. Furthermore,

as shown by Diamond et al,^[33] the virulence of *E.histolytica* in-vivo is enhanced by oral or parenteral administration of iron.

Another observation which was a basis of our assumption was that *Yersinia enterocolitica*, a gram-negative bacillus that requires iron for its growth similar to *E. histolytica*, causes severe infection in the form of multiple liver abscesses in patients such as haemochromatosis who have high iron load in their liver.^[34,35]

The most common symptom was upper abdominal pain (93.2%), tender hepatomegaly was the most common sign (93.2%) as reported by other workers.^[10,11] Incidence of fever varied from 19.4% to 89.47% in different studies.^[10,11,22] 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 socioeconomic status should raise the suspicion of amoebic liver abscess.^[36]

We found anorexia, weight loss cough and diarrhea was (53.4%),^[37] 50 (69.9%) 12 (16.4%) and 10 (13.7%) respectively which correlate with the study of Siddique et al,^[30] 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 agreement with previous studies 62 (86.1%) of the 73 ALA cases had no history of diarrhea or dysentery within the 6 months prior to hospitalization in this study,^[32,38] which confirms the idea that absence of previous history of diarrhea or dysentery does not exclude amoebic liver abscess. Like many developing countries some drugs are easily available throughout Bangladesh. It is common

among the general population to take metronidazole when a person develops loose motion due to any reason. In most of the occasions people stop taking drugs without completing the course after improving the acute symptoms. Thus, symptoms are masked and people may forget the mild symptoms after several weeks. This might explain the lack of prior history suggestive of intestinal amoebiasis during interview in some patients.

Limitations of the Study

This 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. Data was collected from patients of Rajshahi Medical College Hospital. If sample was collected from the patients of different hospital that may give more precise 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.

CONCLUSIONS

From this study we can conclude that amoebic liver abscess is commonly seen in middle-aged alcoholics with male preponderance. It is seen most commonly in low socio economic group with poor sanitation. Most of them had lost their weight and were malnourished. Most of them came from rural area with poor living condition and poor hygiene. Most of the study subjects suffering from amoebic liver abscess were not habituated to wash their hand properly, did not use safe water for drink and frequently intake previous days food. Majority were habituated

to intake alcohol especially locally fermented brands. 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. Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) had given his/her/their consent for

his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Acknowledgements: Special thanks for Personnel, Colleagues, Residents and Nurses of Rajshahi Medical College Hospital.

REFERENCES

1. Sirinek KR. Diagnosis and treatment of intra-abdominal abscesses. *Surg Infect (Larchmt)*. 2000;1(1):31-8. doi: 10.1089/109629600321272.
2. 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.
3. Stanley SL Jr. Amoebiasis. *Lancet*. 2003; 361:1025-1034
4. Wells CD, Arguedas M. Amebic liver abscess. *South Med J*. 2004;97(7):673-82. doi: 10.1097/00007611-200407000-00013.
5. Ryder SD, Beckingham IJ. ABC of diseases of liver, pancreas, and biliary system: Acute hepatitis. *BMJ*. 2001;322(7279):151-3. doi: 10.1136/bmj.322.7279.151.
6. Dykes AC, Ruebush TK 2nd, Gorelkin L, Lushbaugh WB, Upshur JK, Cherry JD. Extraintestinal amebiasis in infancy: report of three patients and epidemiologic investigations of their families. *Pediatrics*. 1980;65(4):799-803.
7. Petri WA Jr, Haque R, Lyerly D, Vines RR. Estimating the impact of amebiasis on health. *Parasitol Today*. 2000;16(8):320-1. doi: 10.1016/s0169-4758(00)01730-0.
8. Hughes MA, Petri WA Jr. Amebic liver abscess. *Infect Dis Clin North Am*. 2000;14(3):565-82, viii. doi: 10.1016/s0891-5520(05)70121-5.
9. Priyadarshi RN, Kumar R, Anand U. Amebic liver abscess: Clinico-radiological findings and interventional management. *World J Radiol*. 2022;14(8):272-285. doi: 10.4329/wjr.v14.i8.272.
10. Mehta AJ, Vakil BJ. A clinical study of 158 cases of amebic liver abscess. *Indian J Med Sci*. 1970;24(8):478-83.
11. Kini PM, Mammi MKI. Hepatic amoebiasis in Kerala. *J Ind Med Assoc*. 1970;55:7-9
12. Ganesan TK, Palani PM. Amoebic liver abscess. *J Ind Med Assoc*. 1971;584: 108-10.
13. Abd-Alla M, Wahib A, Ravdin JI. Diagnosis of amebic colitis by antigen capture ELISA in patients presenting with acute diarrhea in Cairo, Egypt. *Trop Med Int Health*. 2002;7:1-6.
14. Haque R, Duggal P, Ali IM, Hossain MB, Mondal D, Sack RB, et al. Innate and acquired resistance to amebiasis in bangladeshi children. *J Infect Dis*. 2002;186(4):547-52. doi: 10.1086/341566.
15. Stanley SL Jr. Protective immunity to amebiasis: new insights and new challenges. *J Infect Dis*. 2001;184(4):504-6. doi: 10.1086/322046.
16. Barwick RS, Uzicanin A, Lareau S, et al. Outbreak of amebiasis in Tbilisi, Republic of Georgia, 1998. *Am J Trop Med Hyg*. 2002; 67:623-631.
17. Khan U, Mirdha BR, Samantaray JC, Sharma MC. Detection of *Entamoeba histolytica* using polymerase chain reaction in pus samples from amoebic liver abscess. *Indian J Gastroenterol*. 2006;25:55-7.
18. Nagakura K, Tachibana H, Tanaka T, Kaneda Y, Tokunaga M, Sasao M, et al. An outbreak of amebiasis in an institution for the mentally retarded in Japan. *Jpn J Med Sci Biol*. 1989;42(2):63-76. doi: 10.7883/yoken1952.42.63.
19. Krogstad D J. Isoenzyme patterns and pathogenicity in amebic infection. *N Engl J Med*. 1986;315:390-391.
20. Ravdin J I. Amebiasis. *Clin Infect Dis*. 1995; 20:1453-1466.
21. Nagakura K, Tachibana H, Kaneda Y, Suzuki H, Sasaoka K, Kobayashi S, et al. Amebiasis in institutions for the mentally retarded in Kanagawa



- Prefecture, Japan. *Jpn J Med Sci Biol.* 1990;43(4):123-31. doi: 10.7883/yoken1952.43.123.
22. Hai AA, Singh A, Mittal VK, Karan GC. Amoebic liver abscess. Review of 220 cases. *Int Surg.* 1991;76(2):81-3.
23. DeBakey ME, Jordan GL Jr. Hepatic abscesses, both intra- and extrahepatic. *Surg Clin North Am.* 1977;57(2):325-37. doi: 10.1016/s0039-6109(16)41185-0.
24. WHO Scientific Working Group. Parasite related diarrhoeas. WHO Scientific Working Group. *Bull World Health Organ.* 1980;58(6):819-30.
25. Khan M, Akhter A, Mamun A A, Mahmud T A K, Ahmad K U. Amoebic liver abscess: Clinical profile and therapeutic response. *Bang J Med.* 1991; 2: 32- 38.
26. Kubes P, Jenne C. Immune Responses in the Liver. *Annu Rev Immunol.* 2018;36:247-277. doi: 10.1146/annurev-immunol-051116-052415.
27. Mahdi NK, al-Obaidi F, Benyan AZ. Hepatic abscess among Iraqi patients. *J Pak Med Assoc.* 1989;39(10):259-62.
28. Makkar R P, Sachdev G K, Malhotra V. Alcohol Consumption, Hepatic Iron Load and the Risk of Amoebic Liver Abscess. *Intern Med.* 2003; 42(8):644-49.
29. Soomoro A A, Badvi J A, Hafeez A, Durani A. Serodiagnosis of amoebic liver abscess by indirect haemagglutination test. *Medical Channel.* 2009; 2: 72-76.
30. 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. doi: 10.4103/0976-9668.149091.
31. Walsh J A. Problems in recognition and diagnosis of amebiasis: estimation of the global magnitude of morbidity and mortality. *Rev Infect Dis.* 1986; 8: 228-38.
32. Shamsuzzaman SM, Haque R, Hasin SK, Petri WA Jr, Hashiguchi Y. Socioeconomic status, clinical features, laboratory and parasitological findings of hepatic amebiasis patients--a hospital based prospective study in Bangladesh. *Southeast Asian J Trop Med Public Health.* 2000;31(2):399-404.
33. Diamond LS, Harlow DR, Phillips BP, Keister DB. *Entamoeba histolytica*: iron and nutritional immunity. *Arch Invest Med (Mex).* 1978;9 Suppl 1:329-38.
34. Bergmann TK, Vinding K, Hey H. Multiple hepatic abscesses due to *Yersinia enterocolitica* infection secondary to primary haemochromatosis. *Scand J Gastroenterol.* 2001;36(8):891-5. doi: 10.1080/003655201750313450.
35. Hart H H. The potentiation of yersinial infections in iron storage disorders. *Hepatology.* 1990; 12: 370-372.
36. Meng XY, Wu JX. Perforated amoebic liver abscess: clinical analysis of 110 cases. *South Med J.* 1994;87(10):985-90. doi: 10.1097/00007611-199410000-00004.
37. Roediger R, Lisker-Melman M. Pyogenic and Amoebic Infections of the Liver. *Gastroenterol Clin North Am.* 2020;49(2):361-377. doi: 10.1016/j.gtc.2020.01.013.
38. Aikat BK, Bhusnurmath SR, Pal AK, Chhuttani PN, Datta DV. Amoebic liver abscess--a clinicopathological study. *Indian J Med Res.* 1978;67:381-91.

Source of Support: Nil, Conflict of Interest: None declare