



IJSRM

INTERNATIONAL JOURNAL OF SCIENCE AND RESEARCH METHODOLOGY

An Official Publication of Human Journals




Human Journals

Case Series


May 2022 Vol.:21, Issue:3

© All rights are reserved by Shrinivas S. Kale et al.

Cytology of Amoebic Liver Abscess: A Case Series



IJSRM
INTERNATIONAL JOURNAL OF SCIENCE AND RESEARCH METHODOLOGY
An Official Publication of Human Journals



Sampada D. Jaware¹, Shrinivas S. Kale*², Shivaji D. Birare³, Priya K.Umare⁴, Rupali Munde⁵

1,4 – Resident Of Department Of Pathology, S.R.T.R. G.M.C. Ambajogai, India.

2 – Assistant Professor Of Pathology, S.R.T.R. G.M.C. Ambajogai, India.

3 – Professor, Department Of Pathology, S.R.T.R. G.M.C. Ambajogai, India.

5 – Tutor Of Department Of Pathology, S.R.T.R. G.M.C. Ambajogai, India.

Submitted: 20 April 2022
Accepted: 26 April 2022
Published: 30 May 2022

Keywords: ALA, Entamoeba Histolytica, Abscess.

ABSTRACT

Amoebic Liver abscess is the most common extra-intestinal manifestation of amoebic infection. It has an association with various factors like overcrowding, poor sanitation, chronic alcoholics, etc. Infection primarily occurs by feco-oral transmission by drinking contaminated water. Early diagnosis and treatment of infection are essential as an invasive iac tamponade, etc. Diagnostic modalities for an amoebic liver abscess include wet mount examination of fluid from abscess cavity, cytological examination of fluid, Detection by ELISA, Culture, etc. Cytological examination of pus from the abscess cavity along with wet mount examination can provide a rapid clue in the diagnosis of amoebic liver abscess.



HUMAN JOURNALS

www.ijsrm.humanjournals.com

INTRODUCTION

The word amoeba is derived from the Greek word "amiable" meaning change. Amebae are structurally simple protozoans that have no fixed shape.¹Entamoeba histolytica was discovered by Losch in 1875. Councilman and Lafleur in 1891 established the pathogenesis of intestinal and hepatic amebiasis and introduced the terms "amoebic dysentery" and "amoebic liver abscess". It is the third leading parasitic cause of mortality, after malaria and schistosomiasis.¹Entamoeba histolytica (E. histolytica) is a facultative protozoan parasite implicated in amoebic liver abscesses (ALA), the most common extraintestinal manifestation of this infection. E. histolytica is endemic to sub-tropical and tropical countries and has been a major public health concern. This has been attributed to a multitude of factors such as poor sanitation, hygiene, male sex, middle age, overcrowding, unsanitary practices in the production of indigenous alcoholic beverages, and alcohol consumption. Infection arises primarily from fecal-oral transmission through the consumption of contaminated drinking water containing cysts. The progression of infection to invasive disease is contingent on the unique interplay between host and pathogen factors, such as the strength of host immunity to overcome infection and the inherent pathogenicity of the Entamoeba species. As a preventable illness, E. histolytica complications such as ALA impose a significant burden on the healthcare system.² Diagnosis of E. histolytica include various modalities like wet mount preparation, cytological examination, and mucosal scrapping, Culture, stool examination, ELISA. Cytological examination of fluid from the abscess cavity by rapid PAP Stain can provide an important clue in rapid diagnosis of Amoebic Liver Abscess.

CASE SERIES

CASE-1

63 years old male came to the hospital with a complaint of pain in the abdomen for since 15 days. He was chronic alcohol for 10 yrs. He also has a history of fever since 5 days and weakness. Laboratory biochemical tests were performed which showed following findings: Serum bilirubin (total) -1mg/dl, Serum bilirubin(direct) -0.6 mg/dl, SGPT-32 U/L, SGOT -28 U/L, Alkaline phosphate – 102 U/L.

CECT ABDOMEN showed an ill-defined hypodense lesion of size 102X98X70 mm in segment 4B of the liver. In the post-contrast study, the lesion showed peripheral shaggy enhancing walls and a few similar minimally enhancing septa. There was the stranding of adjacent fat. There was no evidence of calcification in the wall. No evidence of invasion of adjacent vascular structures. F/S/O Liver abscess.

CASE-2

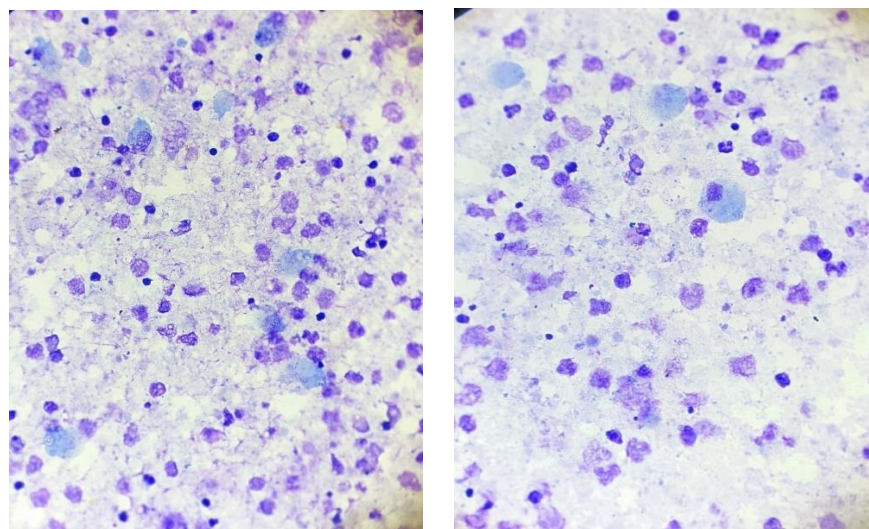
35 years old man came to the hospital with a complaint of pain in abdomen for since 8 days. He was chronic alcoholic for 5 years. He also has history of fever with chills since 3 days. Laboratory biochemical tests were performed which showed following findings: Serum bilirubin (total) -2,5mg/dl, Serum bilirubin(direct) -1.5 mg/dl, SGPT-52 U/LSGOT -48 U/L, Alkaline phosphate – 158 U/L. Typhoid Ig-M antibody was negative.

USG was done which suggested findings suggestive of liver abscess.

USG guided diagnostic aspiration of the liver abscess was done in both the cases. Fluid was aspirated and sent to the pathology department in the sterile containers for cytological analysis. Grossly in both the cases fluid was thick, brown colored, and semi-transparent appearing as “anchovy sauce” infig.1&2(Case1 and Case2 respectively and was 4ml and 15 ml in volume respectively. Thin smears were prepared and stained with pap stain for microscopic examination. Wet mount preparations were also examined. On wet mount preparation and pap staining trophozoites of *Entamoeba Histolytica* were seen in both the cases.



Photomicrograph. 1 Gross appearance of liver abscess aspirate-Received anchovy sauce colored fluid in both the Case-1 & Case-2 4ml and 15 ml respectively.



Photomicrograph.2 Microscopic picture of liver Abscess showing trophozoites of Entamoeba Histolytica along with mixed inflammatory cells -2.1 and 2.2- 10x (left-Case1) and 40x (right-Case2) respectively.

DISCUSSION

Entamoeba histolytica (E. histolytica) is a facultative protozoan parasite implicated in amoebic liver abscesses (ALA). Amoebae are classified as¹:

TABLE 1 Classification of amoeba

Intestinal amebae	Free-living amebae
<ul style="list-style-type: none"> • Entamoeba histolytica • Entamoeba dispar • Entamoeba coli • Entamoeba polecki • Entamoeba hartmanni • Entamoeba gingivalis • Endolimax nana • Iodamoeba butschlii 	<ul style="list-style-type: none"> • Naegleria fowleri • Acanthamoeba spp. • Balamuthia mondrillaris

Amoebic liver abscess is common in India mainly in states of Tamilnadu, Maharashtra, and Chandigarh. Risk factors of invasive amoebiasis include poor sanitation, poor hygiene, overcrowding, low socioeconomic status, male sex, middle age, and immune suppression. Also seen in malnourished and vitamin deficiency people. Alcoholism is also a risk factor.³

Infection is acquired by the feco-oral route via ingestion of mature quadric nucleated cysts in contaminated food or water. These matured cysts are capable of living in the external environment for up to 10 days and are resistant to gastric acid and unfavorable environmental conditions because of their thick walls. After ingestion, the cyst undergoes excystation at the lower part of the ileum and caecum in response to increase alkalinity and trypsin-induced damage to the cyst wall.⁴ The pathogenesis of amoebiasis is mediated by the binding of the trophozoites to the specific receptors expressed in the large intestinal epithelium. Colonization of the colon results in the formation of distinct flask-shaped ulcers along the epithelium, and eventual penetration of the lamina propria via the production of matrix metalloproteinases. ALA then develops through trophozoite migration via the mesenteric hepatic portal circulation, where microabscesses coalesce to form a single, large right-lobe abscess, commonly on the posterior aspect.²

E. histolytica occurs in three forms¹

1. Trophozoite
2. Precyst
3. Cyst

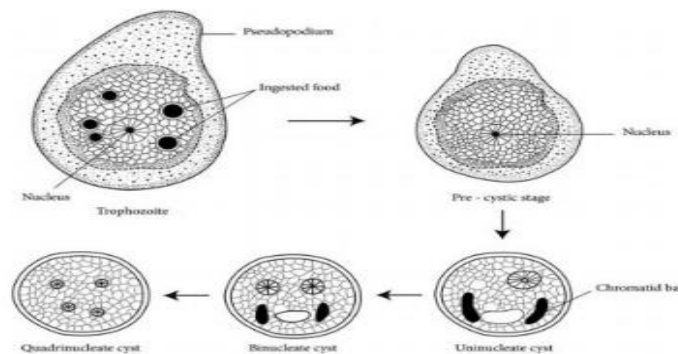


Figure. 1 Morphological forms of amoeba.

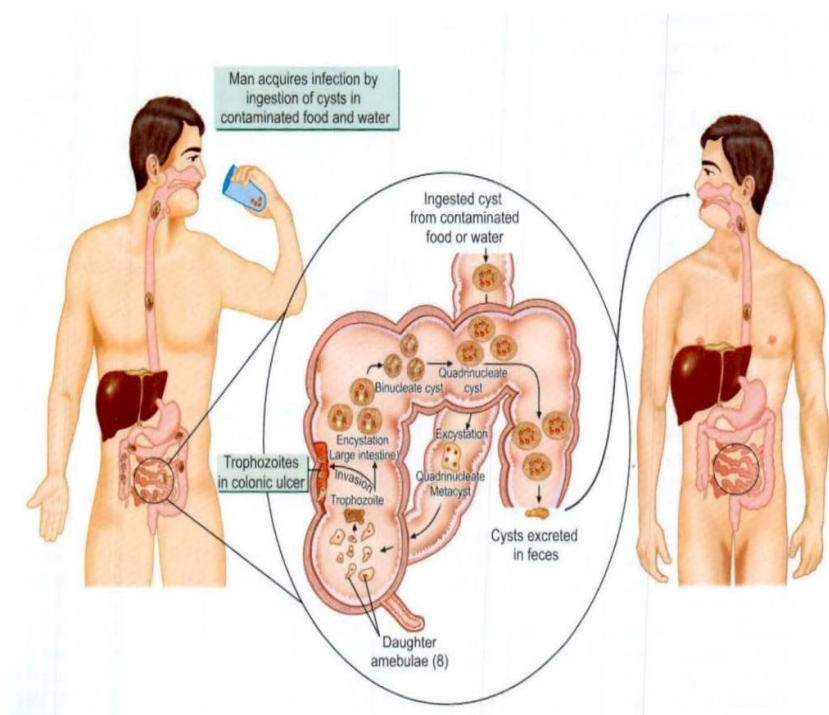


Figure. 2 Life cycle of *Entamoeba histolytica*.¹

Common presenting complaints are abdominal pain, fever, and weight loss.⁶ It is also an important cause of fever of unknown origin. Coexisting diarrhea occurs in 30%. The age predisposition and gender differences may be a result of high alcohol intake by young males which predisposes them to ALA. Alcohol suppresses the function of Kupffer cells (specialized macrophages) in the liver which has an important role in clearing amoeba. Moreover, invasive amoebiasis appears to be dependent on the availability of free iron. A high content of iron in the diet, often obtained from the country liquor in habitual drinkers predisposes to invasive amoebiasis, as does a diet rich in carbohydrates.⁵

The incubation period is highly variable. On average, it ranges from 4 days to 4 months. Hepatic involvement is the most common extraintestinal complication of amoebiasis. Although trophozoites reach the liver in most cases of amoebic dysentery, only in a small proportion do they manage to lodge and multiply there. In about 5-10% of persons with intestinal amoebiasis, liver abscesses may ensue. The center of the abscess contains thick chocolate brown pus (anchovy sauce pus). Liver abscesses may be multiple or more often solitary, usually located in the upper right lobe of the liver. Cardinal signs of amoebic liver abscess are painful

hepatomegaly. Fever is present in most cases. Anorexia, nausea, weight loss, and fatigue may also be present.¹

DIAGNOSIS

1. Wet mount cytology: Cyst has a smooth and thin cell wall and contains round refractile chromatoid bars. Glycogen mass is not visible.¹
2. Mucosal scraping: Scraping obtained by sigmoidoscopy is often contributory. The examination method includes a direct wet mount and iron hematoxylin and immunofluorescent staining with anti-*E. histolytica* antibodies.¹
3. Stool examination: In remote settings, microscopic examination of stool samples for the presence of characteristic cysts or trophozoites remains the gold standard. Stool microscopy plays a vital role in the diagnosis of amoebiasis. The presence of *E. histolytica* is confirmed by its characteristic small mature cyst containing four nuclei.⁴
4. ELISA: Antigen detection ELISA has several significant advantages compared with other methods currently used for the diagnosis of amoebiasis such as microscopy, culture, and even antibody detection tests. The presence of detectable antigen in serum and pus indicates an ongoing infection.⁶

COMPLICATION

Rupture of ALA can cause fatal consequences like peritonitis, empyema, and cardiac tamponade. The pathogenesis of ALA is a consequence of the hematogenous spread of trophozoites from the intestinal loci through the hepatic portal vein in the liver.⁴ Untreated abscesses tend to rupture into the adjacent tissues through the diaphragm into the lung or pleural cavity, pericardium, peritoneal cavity, stomach, intestine, or inferior vena cava or externally through the abdominal wall and skin. Amoebic liver abscess is a serious problem in India⁸ and is 10 times more frequent in adults.¹

CONCLUSION

Cytological examination of fluid from the abscess cavity along with wet mount preparation examination can be very helpful in the diagnosis of amoebic liver abscess.

REFERENCES

1. Paniker Jayaram CK. Amoeba. Ghosh Sougata, Paniker's textbook of medical Parasitology, 8th Ed. New Delhi: Jaypee publishers; 2018. p. 15-24.
2. TharmeganTharmaratnam et al. Entamoeba histolytica & amoebic liver abscess in northern Sri Lanka: a public health problem. Tropical Medicine and Health 2020; 48:2:1-13.
3. Wuerz T et al. A review of amoebic liver abscess for clinicians in a nonendemic setting. Can J Gastroenterol 2012; 26:729-33.
4. Cyril JabeaEkabe, Jules Kehbila, Njinju Asaba Clinton. Giant amoebic liver abscess: A rare Diagnosis in a rural setting of sub-Saharan Africa. Hindawi Journal of Parasitology Research 2021.
5. Ghosh S et al. Clinical,Laboratory and management profile in patients of liver abscess from northern India. Hindawi Journal of Tropical Medicine 2014.
6. Kannathasan et al. Amoebic liver abscess in northern Sri Lanka: first report of immunological and molecular confirmation of aetiology. Parasites and vectors 2017;10:14.
7. Gupta N, Dayal M, Santhalia PK, Ranjan R. Diagnostic and Therapeutic role of USG guided Fine needle aspiration and Cytology in Pyogenic liver abscess. International Journal of Contemporary Medical Research 2021; 8:3.
8. Sharma MP, Rai RR, Acharya SK, Samantha Ray JC, Tandon BN. Needle aspiration of amoebic liver abscess. BMJ 1989; 299:1308-9.



<i>Image</i> <i>Author -1</i>	<i>Author Name – Dr.Shrinivas Shankarrao Kale</i> <i>Author Affiliation-Assistant Professor,Dept.of Pathology</i> <i>Author Address/Institute Address –SRTR GMC,Ambajogai</i>
<i>Image</i> <i>Author -2</i>	<i>Author Name-Dr.Shivaji Birare</i> <i>Author Affiliation-Professor,Dept. Of Pathology</i> <i>Author Address/Institute Address-SRTR GMC Ambajogai</i>
<i>Image</i> <i>Author -3</i>	<i>Author Name-Dr.Sampada Jaware</i> <i>Author Affiliation-JR-2, Dept.Of Pathology</i> <i>Author Address/Institute Address-SRTR GMC, Ambajogai</i>
<i>Image</i> <i>Author -4</i>	<i>Author Name-Dr.Priya Umare</i> <i>Author Affiliation- JR-2, Dept.Of Pathology</i> <i>Author Address/Institute Address</i>
<i>Image</i> <i>Author -5</i>	<i>Author Name-Dr.Rupali Munde</i> <i>Author Affiliation-Tutor,Dept.Of Pathology</i> <i>Author Address/Institute Address-SRTR GMC Ambajogai</i>