

Amoebic liver abscess: The Evolving Concept Of Management

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Citation

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Abstract

Background

Amoebic liver abscess (ALA) affects mainly rural, male population in endemic zone. Ultrasound guided aspiration and other surgical intervention is still a wide practice by treating personnel in all cases of ALA. Perhaps this approach further aggravates the suffering.

So, aim was to evaluate the treatment protocol for ALA in order to have some guidelines in the management of ALA at our place.

Methods and material

86 confirmed cases of ALA were treated according to the formulated protocol. Follow up was done and analysis was carried out.

Results

82% cases were treated by drug therapy only. In ALA of < 500ml size, success rate of non invasive management was 98.1%.

Conclusion

80% cases may be treated by medical treatment. Adjunct Surgical intervention required in a very few complicated cases. Percutaneous catheter drainage is a viable option in drug resistant cases.

INTRODUCTION

The Entamoeba involves about 10% of world population, fortunately only 10% of infected cases develop the clinical syndrome of amoebic manifestation. ¹ Out of this, only 3-9% cases develop amoebic liver abscess (ALA). The incidence is definitely 3-5 times more in developing countries of tropical regions. The prevalence is as high as 50% in endemic regions. According to one study estimated 40,000 deaths occur annually because of invasive amoebiasis. ² Poor socio-economic status, poor sanitation, over crowding, unsafe drinking water, cultural habits are still the predisposing factors in a developing countries. The morbidity increases and at time mortality occurs if diagnosis is delayed. Drug therapy alone is the mainstay of management. However there is wide practice of aspiration and drainage in all cases with belief that aspiration hastens the clinical recovery with no procedural morbidity as supported by a study. ³ Whereas other have shown that aspiration has no impact on clinical recovery. ⁴ This study was undertaken to evaluate the easily available ultrasonography both as diagnostic and therapeutic tool and to evaluate the treatment protocol of amoebic liver abscess as suggested by world literature.

MATERIAL AND METHOD

Our Institution, a tertiary centre in northern India providing health care to adjoining 8-10 rural districts, located in endemic zone for amoebiasis. Between Dec.2003 to nov.2006, we came across 130 suspected cases of amoebic liver abscess. Out of this, 86 patients were confirmed for ALA. Diagnosis of ALA was made on history, examination, ultrasonography and if required diagnostic aspiration. Serological test was not done routinely being endemic region and financial constraints. Other routine investigations including X-ray chest were carried out in all patients. Culture and sensitivity was reserved for suspected secondary infection. Treatments were given according to the criteria formulated on basis of different clinical trails.

SELECTION CRITERIA

- Suggestive clinical presentation.
- USG finding in all cases.
- Diagnostic aspiration if required.
- CT scan was deferred in selected cases.

INCLUSION CRITERIA

- All patients of amoebic liver abscess.
- Patients received the complete treatment.
- Patients came for follow up as advised.

EXCLUSION CRITERIA

- Patients of pediatric age group.
- Patients who later diagnosed as having other disease.
- Patients lost on early follow up
- Patients having pyogenic liver abscess.

USG CRITERIA FOR DIAGNOSIS

- Wall – echo poor, fine echogenic, or thick echogenic
- Content – hyper and hypo echoic mixed pattern, homogenous hypo echogenic pattern, hypo echoic and anechoic pattern
- Associated right pleural effusion as evidence of rupture
- Aspiration of typical anchovy sauce pus under ultrasound guidance

TREATMENT MODALITIES

Four groups of different treatment modalities were formed.

- Drug therapy only
- USG guided aspiration + Drug.
- Percutaneous Catheter Drainage (PCD) + Drug.
- Laparotomy and drainage + Drug

CRITERIA FOR CONSERVATIVE TREATMENT ONLY

- All non complicated abscesses.
- No features of rupture /impeding rupture.
- No compression effect.
- Symptoms subsided after 72- 96 hours of treatment.

CRITERIA FOR ULTRASOUND GUIDED ASPIRATION

- Large abscess having impending rupture/compression sign.
- Depending on the site. Size varies from >5cm />500ml-onward
- Multiple abscess both left and right lobe.
- Failure in the improvement on non invasive treatment after 4-5 days

CRITERIA FOR PERCUTANEUS CATHETER DRAINAGE

- Thick collection not getting aspirated by needle
- Failure of ultrasound guided aspiration
- When there is impending rupture or compression sign present and features of secondary infection.
- 8 -12F percutaneous catheter was placed under USG guidance and local anesthesia.

CRITERIA FOR LAPAROTOMY & DRAINAGE

- Ruptured abscess in the peritoneal cavity
- Features of peritonitis, involving other viscera.
- Complicated ALA ruptured in the pleural/ pericardium cavity if required.

FOLLOW UP

There was no a definite criteria or duration of follow up. The follow up was dependent on the clinical features and the response to treatment, size & site of abscess, type of associated complication.

STATISTICAL ANALYSIS

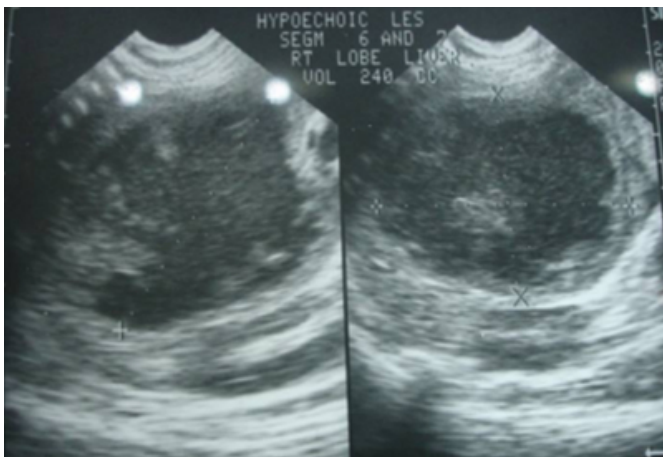
- Mean with standard deviation for age, clinical presentation was calculated.
- Sensitivity, specificity, positive and negative predictive value of ultrasound was calculated.
- Z-test for proportion is applied to find out the significance of factors responsible

RESULTS

The mean age of presentation was 32.4 years. Male preponderance was present in a ratio of 20.5:1. The common presentations were anorexia, pain and discomfort with tender hepatomegaly ($p < 0.001$). On biochemical analysis anemia (8.2 gm/dl with SD of 2.0) was only the significant finding ($p < 0.001$). Ultrasonography was the first imaging technique used in all 130 suspected cases. The true positive diagnosis was made in 83 patients, 17 were false positive (mainly of pyogenic abscess), 27 patients were true negative and false negative was in 3 patients, later on confirmed on CT scan and fine needle aspiration. Sensitivity, specificity, positive and negative predictive value were 96.5%, 61.36%, 83% and 90% respectively. In multiple abscesses, the cavity of largest size is taken into consideration. The right lobe dominance was present in 87.20% cases.(Fig.-1)

Figure 1

Figure 1:Ultrasound finding of ALA in right lobe of liver



56 out of 86 patients were subjected for conservative treatment (as shown in table-1).

Figure 2

Table 1

A. Medical treatment only					
Type	Size of cavity (ml)	No. of patient subjected	No. of patients managed	Failure	Success rate
SINGLE	<500 in R- lobe	37	33	4	89.2%
	<500 in L- lobe	4	3	1	75%
	500-1000 R-lobe	10	5	5	50%
MULTIPLE	<500 in R- lobe	3	3	NIL	100%
	<500 involving both lobes	2	2	NIL	100%
TOTAL		56	46	10	82.1%

(R- Right, L- left, < - less, > - more)

These patients had mild to moderate symptoms with no complication. Out of these 56 patients, 46 were successfully managed by conservative treatment. Only 10 patients show

non resolution of fever and pain. Overall success rate of conservative treatment was 82%, but in patients with cavity size less than 500 ml, success rate was 98.1%.

23 out of 86 patients of ALA were subjected for ultrasound guided needle aspiration and medication (summarized in table-2).

Figure 3

Table 2

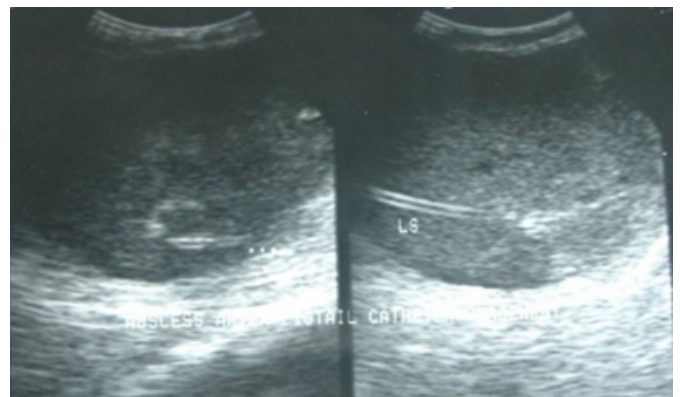
B. Ultrasound guided needle aspiration					
Type	Size of cavity (ml)	No. of patient subjected	No. of patient managed	failure	Success rate
SINGLE	<500 R+ L lobe	4+1=5	5	Nil	100%
	500-1000 R- lobe	5+6=11	7	4	63.6%
	500-1000 L- lobe	4	4	Nil	100%
MULTIPLE	500-1000 R-lobe	2	1	1	50%
	500-1000 B/L	1	1	Nil	100%
TOTAL		23	18	5	78.3%

It included 10 patients non responsive to conservative treatment. 3 with multi-abscess with size 500-1000ml and 10 with single abscess of size 500-1000ml. Out of these 23 patients, 18 were managed successfully. Overall success rate of ultrasound guided needle aspiration was 78.3%.

15 patients were subjected for pigtail catheter drainage (Fig-2).

Figure 4

Figure 2: Photograph showing catheter in the abscess cavity



Including 5 patients of failed ultrasound guided aspiration. 4 cases were of 500-1000 group of right lobe, 6 patients of > 1000ml of abscess cavity with compression features (shown in table-3).

Figure 5

Table 3

C. Pigtail catheter drainage

Type	Size of cavity (ml)	No. of patient subjected	No. of patient managed	failure	Success rate
Single	500-1000	8	8	nil	100%
	>1000 R-lobe	6	6	nil	
multiple	500-1000 in R-lobe	1	1	nil	100%
Total		15	15	nil	100%

All patients showed improvement in symptoms. Catheter was removed after 10-14 days. Success rate of this modality was 100%. 7 patients underwent laparotomy and open drainage (table-4). 3 patients had intra-peritoneal rupture, 1 patient had associated intra-pleural rupture (Fig-3), apart from peritoneal contamination, underwent drainage with inter-costal tube thoracostomy.

Figure 6

Figure 3: X-ray chest showing ruptured abscess in the plural cavity



2 patients presented with large abscess (>1000ml) with caecal perforation peritonitis. They underwent drainage of abscess with limited right hemicolectomy. 1 patient of multiple abscesses having one cavity of >1000ml underwent open drainage procedure. 2 patients out of 7 died (one with intra-peritoneal rupture & one with caecal perforation with large ALA) later on with secondary infection and septicemia.

Figure 7

Table 4

D. Laparotomy

Type	Size of Cavity	No of Patient subjected	No of patient managed	Failure	Success rate
Single	Ruptured R-lobe	3	3	1-died	66.5%
	>1000 R-lobe with caecal perforation	2	2	nil	100%
Multiple	Ruptured R-lobe >1000	1	1	Nil	100%
		1	1	1(Died)	
Total		7	5	2	71.4%

DISCUSSION

EPIDEMIOLOGY

The ALA involves adult population between 20-60yrs. It is dominated by males 3-10 times more than females, ⁵ in our study females were far less, only 4 out of 86 patients. The exact etiology for male predominance and least involvement in extreme ages is not clear. The majority of patients were of rural and poor socioeconomic status. Unhygienic conditions, unsafe drinking water, poor sanitation, over crowding are still the common predisposing factors. Male homosexualities, HIV, inmates of a place, malignancy, low immunity and visit to endemic area are other risk factors. In our study we have not addressed the risk factors and not drawn the analysis.

CLINICAL PRESENTATION

In early sub acute phase symptoms like anorexia, nausea, night sweats dominates. In established cases pain in the right hypochondrium, mild to moderate grade fever and hepatomegaly are the common features. ⁶ High grade fever with chills is suggestive of secondary bacterial infection, occurs in 20% cases. ⁷ Jaundice is uncommon, present in 5-10% cases only. Features of peritonitis are associated with bowel involvement or ruptured liver abscess. Other features may be associated with pleural or pericardial involvement.

DIAGNOSIS

In this era of high resolution imaging, ultrasound is still the mainstay in making the diagnosis. The sensitivity is as high as 80-95%, ⁸ in our study it was 96.5%. Dilemma arises only in some cases, where differentiation with pyogenic abscess and other cystic lesions become difficult. In difficult cases USG guided needle aspiration and CT scan are useful. Ultrasound is also helpful in detecting ruptured abscess, associated biliary disease and peritonitis. Its repetition is easier in follow up. Serological test do help in making the diagnosis, but high false positivity in endemic region has

restricted its role. Demonstration of cysts/ trophozoites by exfoliative cytology is another means of confirming the diagnosis. ⁹ In majority of cases diagnosis is made on history, examination, ultrasonography and diagnostic aspiration of typical anchovy sauce.

TREATMENT

The earlier dictum was “the pus has to be drained” and so drainage was carried out irrespective of nature of liver abscess. Now with more concept of etiopathogenesis and since ALA is not true abscess, the treatment of ALA has radically changed. Majority of ALA is treated by conservative treatment (medical management only). ¹⁰ In uncomplicated ALA up to the size of 10 cm(1000ml) no significant difference was found between metronidazole only treatment and combining with aspiration. ¹¹ In our study also the majority of the abscesses in groups of < 500ml and 500-1000ml were treated with medical therapy only. 15-50% of patients may not respond to only medical treatment. ¹² Those not responded to medical therapy only were subjected for additional drainage procedure. The indications for drainage procedures are large size abscess having compression sign or jaundice, persisting fever with chills, pain and high chances of rupture. ¹³ Ultrasound guided aspiration has both diagnostic and therapeutic advantages. In our observation ultrasound guided aspiration in larger abscesses helps in early relieving of symptoms, but healing takes its own time. Many authors have shown better outcome of liver abscess, either after USG guided aspiration or percutaneous catheter drainage in selected cases irrespective of nature of abscess. ^{14,15} Percutaneous catheter drainage (PCD) is opted for symptomatic larger abscess having either thick content or features of secondary bacterial infection, resistant to drug therapy. ¹⁶ Percutaneous placement of catheter in the abscess cavity under ultrasound guidance and local anesthesia is easy to do as day care procedure. PCD is cost effective; the morbidity of open and laparoscopic drainage can be avoided. Laparotomy is required in ruptured abscess, associated peritonitis and in bowel involvement. Caecum and right colon are commonly involved viscera along with ALA in our observation and by others, ¹⁷ though the amoebic colitis is common in sigmoid colon. Laparoscopic drainage has no additional advantage over PCD, rather pneumoperitoneum undo the Nature's protection. The laparoscopy is beneficial in ruptured abscess where peritoneum toileting, placement of drain and exploration of bowel are possible. The morbidity in ALA increases due to ruptured abscess either in peritoneal, plural

or pericardial cavity. Secondary infection and septicemia is the main associated cause for mortality. Hence the admonition “delay is dangerous” is also suitable for amoebic liver abscess. ALA takes few weeks to as much as 18 months for its resolution. ¹⁸ Demonstration of cavity/ lesion on imaging after completion of treatment and in follow up does not mean to re-start the treatment, rather relies on symptoms and appearance of new lesion.

CONCLUSION

Conservative treatment in form of metronidazole/tinidazole and sometime combining it with antibiotic in associated secondary infection is the sheet anchor in the management of around 80% of ALA. Drainage is only required in large abscess having compression features, secondary infection and resistance to drug therapy. Percutaneous catheter drainage is a viable option to drain the high viscous content of ALA adequately. Relieving of symptoms is the parameter for the response of treatment. Surgical intervention in all cases is unwanted and it should be avoided.

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References

1. Sharon LR. Amoebiasis and infections with free living amoebas. In: Fauci AS, Braunwald E, et al. eds. *Harrison's principles of internal medicine* 14th ed. USA. Mc Graw Hill. 1998; 1126-1180.
2. Li Ellen, Stanley L. Protozoa: amoebiasis. *Gastroenterol Clin N Am.* 1996; 25: 471-492.
3. Tandon A, Jain AK, Dixit VK, et al. Needle aspiration in huge amoebic liver abscess. *Trop. gastroenterol* 1997; 18: 19-21.
4. VanAllenRJ, KatzMD, JohnsenMB, LaineLA, Liu Y, Ralls PW. Uncomplicated amoebic liver abscess: prospective evaluation of percutaneous therapeutic aspiration. *Radiology* 1992; 183: 827-830
5. SepulvedaB, ManzoNTG, Clinical manifestation and diagnosis of amebiasis. In: Martinez-PalomaA (eds) *Amoebiasis: Human parasitic disease.* Austerdam, Elsevier. Chap 5 1986; 169-187
6. Hoffmer RJ, Kilagbhan T, Eskogwu VI, Handevson SO. Common presentation of amoebic liver abscess. *Ann Emerg med.* 1999; 34: 351-355.
7. Sherlock S, Dooley J. *Liver infection,* In: *Disease of liver and biliary system.* 9th ed. London Blackwell 1993; 471-477
8. Yeoh KG, Yap I, Wong ST, Wee A, et al *Tropical liver disease.* PGMJ 1997; 73:89-92
9. Bhambhani S, Kashyap V, Amoebiasis: diagnosis by

aspiration and exfoliative cytology. *Cytopathol* 2001; 12: 329-322.

10. Sharma MP, Ahuja V, Management of amoebic and pyogenic liver abscess, *Ind J Gastrol* 2001; 20suppl: C33-36

11. Blessmann J, Binh HD, Hung DM, et al. Treatment of liver abscess with metronidazole alone or in combination with Ultrasound guided aspiration:-a comparative, prospective and randomized study. *Trop Med and Int Health*. 2003; 8: 1030-1034

12. Khanna S, Chaudhary D, Kumar A, et al. Experience with aspiration in case of amoebic liver abscess in an endemic area. *Eur J Clin Microbiol Infected Dis*. 2005; 24:428-430.

13. Salles JM, Moraes LA, Salles MC, Hepatic amoebiasis. *Braz J Infect Dis*. 2003; 7: 96-110.

14. Mohan S, Talwar N, Chaudhary A, et al. Liver abscess: a clinicopathological analysis of 82 cases. *Int. Surg*. 2006; 91: 228-33

15. Kapadia S, Duttaroy D, Ghodgaonkar P, et al. Percutaneous catheter drainage of liver abscesses. *IJS* 2002; 64: 516- 519

16. Hanna RM, Dahniya MH, Badr SS, et al. Percutaneous catheter drainage in drug resistant amoebic liver abscess. *Trop Med and Int Health*. 2000; 5: 578-581

17. Ibrarullah MD, Aggarwal DK, Kapoor VK. Ruptured amoebic liver abscess - changing trends in management. *Trop gastroenterol*. 1993; 14: 132-138

18. Sharma MP, Dasarathy S. Amoebic liver abscess. *Trop Gastroenterol*. 1993; 14: 3-9

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