

The Role of Ultrasound Guided Percutaneous Needle Aspiration in Moderately Sized Uncomplicated Amoebic Liver Abscess Failed To Conservative Management

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Abstract: Amoebiasis is largely a disease of tropical and developing countries but also a significant problem in developed countries because of immigrant and travelling between countries. Amoebic liver abscess is more common between 21-50yrs of age. Poverty and poor living conditions are associated with higher rate of infection. A male preponderance had been noted. Alcoholics are more commonly affected. The mainstay of treatment for amoebic abscess less than 5cms is Metronidazole(750 mg orally for 5-7 days). For amoebic liver abscess between 6-10cms which did not improved clinically after medical treatment, USG guided percutaneous needle aspiration was very effective. Advantages of aspiration are- minimal trauma, rapid clinical improvement, short hospital stay, little morbidity, early and complete resolution of cavity, patient acceptance is high and cost is low. Needle aspiration avoids problems related to catheter care and long-term hospital care. Multiple abscesses can be aspirated through different tracts at same sitting. Aspiration is also suitable for abscess in left lobe of liver.

Keywords: amoebic liver abscess; percutaneous aspiration; USG guided aspiration.

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FIGURE-1: FIGURE SHOWING PROCEDURE OF USG-GUIDED PERCUTANEOUS NEEDLE ASPIRATION

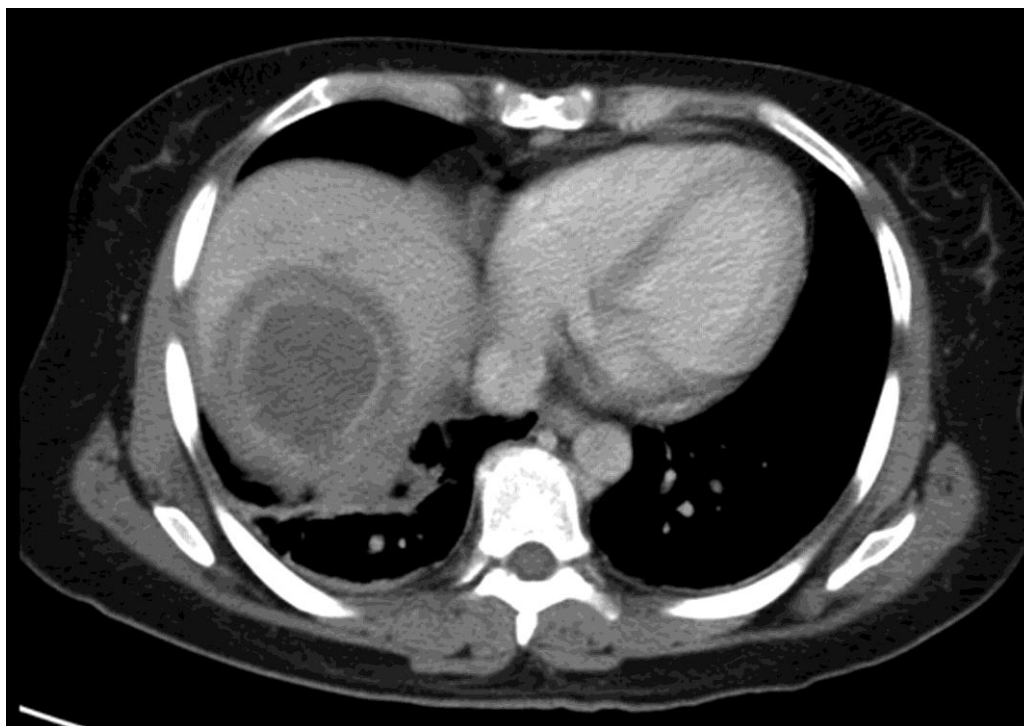


FIGURE-2: FIGURE OF CECT SHOWING ROUNDED WELL DEFINED HYPODENSE LESION WITH ENHANCING WAL AND PERIPHERAL OED

I. Introduction

Liver abscess is a common condition in India. It is associated with high morbidity and mortality. It is a common disease of the tropical region. Abscess develops in liver due to various reasons, but is broadly classified into Amoebic and pyogenic. Colonic Amoebae are mainly responsible for the development of the abscess. The options in managing Amoebic liver abscess are medical and percutaneous or open surgical drainage. Uncomplicated Amoebic liver abscess has been managed conservatively with amoebicidal and antibiotic drugs. However, ultrasound guided pigtail catheter drainage has been advocated more recently. There are different views and protocols for the management of this disease. The review of literature reveals that the smaller Amoebic liver abscesses, (multiple or single) can be treated conservatively. Larger Amoebic liver abscesses or Amoebic liver abscess with complications (pre-rupture, rupture, pressure effects) require intervention in the form of either closed or open drainage. However, there is no clear cut consensus for the management of uncomplicated symptomatic medium sized Amoebic liver abscesses with treatment modalities ranging from drugs alone to needle aspiration to pigtail catheter drainage. The present study is an effort to establish an objective criterion for management of such abscesses. Our study is designed to find out the role of ultrasound guided percutaneous needle aspiration in moderately sized uncomplicated amoebic liver abscess failed to conservative management. Effective management of the disease would help in decreasing morbidity and mortality associated with the disease.

II. Materials And Methods

STUDY AREA: Department of General Surgery, Midnapore Medical College & Hospital.

STUDY POPULATION: All patients admitted with moderate sized uncomplicated amoebic liver abscess in Midnapore Medical College & hospital.

STUDY PERIOD: One year

SAMPLE SIZE: Approximately 40 in number

STUDY DESIGN: Prospective study with a follow up period of three months

PARAMETERS TO BE STUDIED:

A. PRE-ASPIRATION EVALUATION OF PATIENTS-

1. History and clinical examination
2. Liver function test (LFT)
3. Radiological examination-USG of whole abdomen
4. CECT, if needed
4. PT-INR

B. POST-ASPIRATION EVALUATION OF PATIENT

1. Time period for clinical improvement
 2. Duration of hospital stay
 3. Radiological evaluation
 4. Need for re-intervention
 5. Morbidity
 6. Mortality
- c. EVALUATION DURING FOLLOW UP PERIOD(3 MONTHS)

1. Recurrence
2. Resolution of abscess cavity by USG

INCLUSION CRITERIA: All patients admitted in CNMC&H with moderately sized(6-10cms) uncomplicated amoebic liver abscess failed to conservative management

EXCLUSION CRITERIA:

1. Abscess size less than 6 cms and more than 10 cms
2. Impending rupture
3. Ruptured abscess
4. Jaundice
5. Toxic patients(secondary infection)
6. Ascites
7. Amoebic liver abscess responded to conservative management for three days
8. Patients with INR>1.5

STUDY TOOLS:

1. Ultrasonography machine
2. Aspiration needle
3. CT machine

STUDY TECHNIQUE:

Patient admitted through OPD or Emergency in CNMC&H with clinically or radiologically confirmed moderate sized(6-10 cms) uncomplicated amoebic liver abscess was treated by conservative management(Metronidazole -750 mgs, thrice daily). Clinical improvement was assessed daily for next three days. Those patients who did not improve clinically after three days were considered for Ultrasound guided percutaneous needle aspiration. Then the patients were followed clinically and radiologically at 7 days, 30 days and 90 days.

The data was collected and compiled in a master chart. Then the suitable statistical analysis was done to conclude regarding the role of ultrasound guided percutaneous needle aspiration in moderately sized uncomplicated amoebic liver abscess failed to conservative management.

III. Result

In our study, maximum age incidence for ALA was 21-50 yrs, about 82.5% of the patients were in this age group which is consistent with previous studies. Male:Female ratio was 5:3. among the male patients, 64%(16 patients among 25 male patients) were alcoholic, which indicate that ALA is more common in alcoholics. Clinical presentation observed by us in patients with ALA were abdominal pain (90%), fever(80%), anorexia(45%), pallor (40%) , abdominal tenderness(72%) and hepatomegaly(60%) which is consistent with previous studies.

In our study, ultrasonography of abdomen showed right lobe involvement in 65% cases, left lobe involvement in 25% cases and both lobes were involved in 10% of cases. About 75% of cases presented with size of the cavity between 8-9 cms. CECT was done in few cases where diagnosis was not confirmed by USG. Serology was rarely done because of endemic nature of amoebiasis.

The laboratory report revealed, leucocytosis in 80% of cases, anemia in 40% of cases, the most marked LFT abnormality was raised alkaline phosphatase(ALP) in 75% of the cases. Abnormal Prothrombin time was observed in 55% of the patients. INR was raised in 55% of the cases.

All the seventy(70) patients with abscess size 6-10 cms were treated initially conservatively. Daily clinical improvement was noted. The patients(forty in number) who did not improve clinically after three days were treated by USG guided percutaneous needle aspiration. After aspiration patients were followed clinically and radiologically. Single aspiration was successful in about 75% of cases which is consistent with previous studies. Reaspiration was needed in 25% of cases.

The main drawback of aspiration was repeated aspiration leading to pain which was found in 25% of cases. Other complications were secondary infection(5%);localised peritonitis(5%) and haemorrhage(2.5%).No percutaneous fistula or bowel injury occurred.

About 80% of the patients took more than three months for complete resolution of abscess cavity .

TABLE-1: AGE DISTRIBUTION OF PATIENTS

AGE (YRS)	NO OF PATIENTS	PERCENTAGE(%)
10-20	2	5
21-30	12	30
31-40	13	32.5
41-50	8	20
>50	5	12.5
TOTAL NO OF PATIENTS	40	100%

About 82.5% of the patients were in the age group of 21 to 50 years

TABLE-2: SEX DISTRIBUTION OF PATIENTS

SEX	NUMBER OF PATIENTS	PERCENTAGE(%)
MALE	25	62.5
FEMALE	15	37.5

In our study males were affected most commonly(62.5%)

TABLE-3: DISTRIBUTION OF PATIENTS ACCORDING TO ALCOHOLIC HISTORY

	NO OF PATIENTS	PERCENTAGE(%)
ALCOHOLIC	16	40
NON-ALCOHOLIC	24	60
TOTAL NO OF PATIENTS	40	100%

About 40% of the patients who were alcoholic were affected by amoebic liver abscess

TABLE-4: DISTRIBUTION OF PATIENTS ACCORDING TO CLINICAL FEATURES

CLINICAL FEATURES	NUMBER OF PATIENTS	PERCENTAGE(%)
PAIN ABDOMEN	36	90
FEVER	32	80
ANOREXIA	18	45
PALLOR	16	40
ABDOMINAL TENDERNESS	28	72
HEPATOMEGALY	24	60

Most of the patients presented with pain abdomen(90%) and fever(80%)

TABLE-5(A): DISTRIBUTION OF PATIENTS ACCORDING TO HEMOGLOBIN LEVEL

HEMOGLOBIN LEVEL	NO OF PATIENTS	PERCENTAGE(%)
7.0-9.0	16	40
9.1-11.0	16	60
>11	8	20

About 40% of the patients presented with pallor

TABLE-5(B): DISTRIBUTION OF PATIENTS ACCORDING TO TOTAL LEUCOCYTE COUNT

TOTAL LEUCOCYTE COUNT	NO OF PATIENTS	PERCENTAGE(%)
< 10,000	8	20
10,000-15,000	20	50
>15,000	12	30

About 80% of the patients had TLC count more than 10,000

TABLE-5(B): DISTRIBUTION OF PATIENTS ACCORDING TO ALP LEVEL

ALP LEVEL	NO OF PATIENTS	PERCENTAGE(%)
<200	4	10
201-250	6	15
251-300	18	45
>300	12	30

About 45% of the patients had ALP level between 251-300

TABLE-5(C): DISTRIBUTION OF PATIENTS ACCORDING TO PROTHROMBIN TIME

P TIME	NO OF PATIENTS	PERCENTAGE(%)
11-12	6	15
13-14	12	30
>14	22	55

About 45% of the patients had P Time more than 14

TABLE-5(D): DISTRIBUTION OF PATIENTS ACCORDING TO INR LEVEL

INR LEVEL	NO OF PATIENTS	PERCENTAGE(%)
1.0-1.1	6	15
1.2-1.3	12	30
1.4-1.5	22	55

About 55% of the patients had INR between 1.4-1.5

TABLE-6(A): DISTRIBUTION OF PATIENTS ACCORDING TO INVOLVED LOBE

INVOLVED LOBE	NO OF PATIENTS	PERCENTAGE(%)
RLL	26	65
LL	10	25
BOTH LOBE	4	10

About 65% of the patients presented with abscess in right lobe of liver

TABLE-6(B): DISTRIBUTION OF PATIENTS ACCORDING TO SIZE OF ABSCESS

SIZE OF ABSCESS(cm)	NO OF PATIENTS	PERCENTAGE(%)
6 cm	2	5
7 cm	4	10
8 cm	16	40
9 cm	14	35
10 cm	4	10

About 85% of the patients presented with liver abscess measuring between 8 to 10 cms

TABLE-7: DISTRIBUTION OF PATIENTS ACCORDING TO NEED OF REASPIRATION

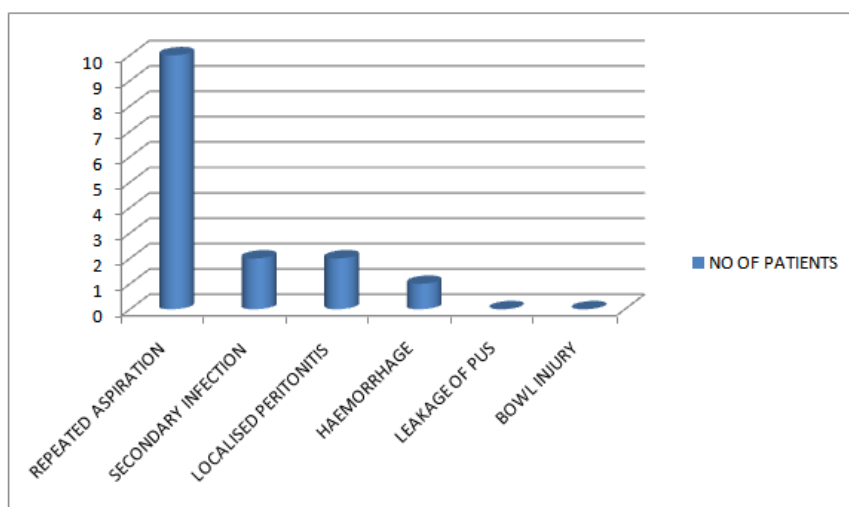
	NO OF PATIENTS	PERCENTAGE(%)
REASPIRATION NEEDED	10	25
RESPIRATION NOT NEEDED	30	75

Single aspiration was effective in about 75% of cases. Reaspiration was needed in 25% of cases.

TABLE-8: DISTRIBUTION OF PATIENTS ACCORDING TO COMPLICATIONS

COMPLICATIONS	NO OF PATIENTS	PERCENTAGE(%)
REPEATED ASPIRATION LEADING TO PAIN	10	25
SECONDARY INFECTION	2	5
LOCALISED PERITONITIS	2	5
HAEMORRHAGE	1	2.5%
LEAKAGE OF PUS	0	0
BOWL INJURY	0	0

FIGURE-3: DISTRIBUTION OF PATIENTS ACCORDING TO COMPLICATION

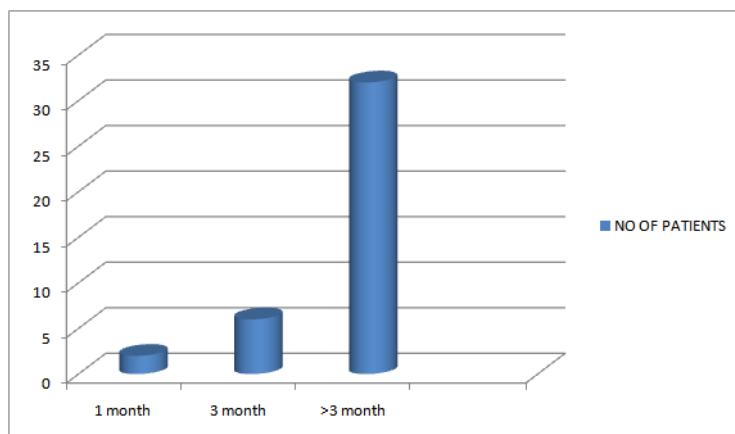


Repeated aspiration leading to pain was most common drawback in 25% of the cases

TABLE-9: DISTRIBUTION OF PATIENTS ACCORDING TO TIME TAKEN FOR RESOLUTION OF ABSCESS

TIME TAKEN FOR RESOLUTION	NO OF PATIENTS	PERCENTAGE(%)
1 month	2	5
3 month	6	15
>3 month	32	80

FIGURE-4: DISTRIBUTION OF PATIENTS ACCORDING TO TIME TAKEN FOR RESOLUTION OF ABSCESS



For complete resolution of abscess cavity, more than 80% of the patients took more than three months

IV. Discussion

Despite its medical importance and the fact that *E. histolytica* is endemic in large parts of the world; little is known about the epidemiology of amoebiasis, and amoebic liver abscess. The last estimate on the global magnitude of the disease was made approximately fifteen years back.^{2,3} It is estimated that 12% of the world population is infection by *E. histolytica*, including 50% of the population in tropical and subtropical regions, which will result in approx. 50 million cases of invasive amoebiasis and up to 1,00,000 deaths. ^{4,5} In the United states, amoebic liver abscess has become a rare disease that is found almost exclusively in travelers and immigrants. In 1994, the last year in which incidence data collected, there were only 2383 cases of amoebiasis; the percentage of cases complicated by abscess is unknown, but is probably well under 10%, roughly 1 case per million person per year.^{6,7} The prevalence of amoebic infection may be as high as 50% in certain developing areas. Serological studies in Mexico city indicated that up to 9% of the population were infected with *E. histolytica* in the last 5 – 10 years.^{8,9} High rates of amoebic infection occur in the Indian subcontinent, in Southern and western Africa, in the far east, and in areas of south and Central America. Symptomatic invasive amoebiasis develops in approximately 10% of individuals with asymptomatic *E. histolytica* infection. Therefore, in large prospective studies disease will develop in only one of 100 individuals who are determined to be asymptotically infected with *Entamoeba histolytica* by stool microscopy. However, in areas of endemicity, the geographic variation is wide, and there are discrete pockets in which *E. histolytica* infection occurs. *E. histolytica* infection elicits humoral response even without invasion of mucosa. In areas of endemicity, the high prevalence of individuals who are seropositive for antibodies to amoebae (often 25% of the population) is apparently due to remote cases of asymptomatic *E. histolytica* infection (which is tenfold more common than symptomatic invasive amoebiasis) ^{9,10} This high frequency has confounded the use of serology for the diagnosis of invasive amoebiasis in areas of endemicity. *E. histolytica* is very uncommon etiology of traveler's diarrhea. *E. histolytica* infection usually occur after a long term (>1month) stay in areas of endemicity and are usually detected unless symptomatic disease occurs. Travelers to the tropics are at a low but definite risk for acquiring amoebic infection.^{11,12} Following return or emigration from an area of endemicity, 95% of patients who have developed an amoebic liver abscess will present within five months. The incidence of hepatic amoebiasis in Southeast Asia has been documented to vary from 5% to 40% of patients with amoebic parasitization. One study of 2700 German citizens returning from tropical areas demonstrated a 0.3% incidence of *E. histolytica* infection.¹¹ A recent study in Vietnam around Hue city identified an area with an extra ordinary high incidence of amoebic liver abscess patients. They reported approximately 2000 cases of amoebic liver abscess between 1990 to 1998; they came out with good statistical and distribution analysis.² As reported by World Health Organization in 1995, approximately 40 to 50 million people worldwide became symptomatic with amoebic colitis or amoebic liver abscess, resulting in 40,000 to 100,000 deaths per year.¹³ The disease now

accounts for a relatively small number of cases in the developed countries. Payne reported liver abscess in 2.8% of 1000 patients infected with amoebic dysentery in East India during World War II.¹⁴ Death and illness due to amoebic dysentery and liver abscess worldwide are extensive. Estimated 40 million develop intestinal disease or liver abscess annually; 40,000 die from amoebiasis annually. Human is definitive host. Approximately 10 percent of the world's population is infected, 90 percent of infected persons are asymptomatic. Of the roughly 50 million symptomatic cases occurring each year, up to 100,000 are fatal. The stable reservoir of infective cases complicates eradication. After Malaria, it is likely that *E.histolytica* is the world's second leading protozoan cause of death.

V. Conclusion

The mainstay of treatment for amoebic abscess less than 5cms is Metronidazole(750 mg orally for 5-7 days).For amoebic liver abscess between 6-10 cms which did not improved clinically after medical treatment, USG guided percutaneous needle aspiration was very effective. Advantages of aspiration were- minimal trauma, rapid clinical improvement, short hospital stay, little morbidity, early and complete resolution of cavity, patient acceptance is high and cost is low. Needle aspiration avoids problems related to catheter care and long-term hospital care. Multiple abscesses can be aspirated through different tracts at same sitting. Aspiration is also suitable for abscess in left lobe of liver.

SOURCE OF SUPPORT: Nil.

CONFLICTS OF INTEREST: None declared.

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