

ROLE OF ULTRASONOGRAPHY IN AMOEBIC LIVER ABSCESS MANAGEMENT: A STUDY IN RURAL NORTH INDIAPawan Tiwari¹, Monu Sarin², Madhu Tiwari³**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: OBJECTIVE: The purpose of the study was to find out the role of ultrasonography in management of amoebic liver abscess. In this area, the simplest method for diagnosis and to determine the effectiveness of treatment proved by disappearance of symptoms and regression in the size of abscess cavity. **METHODS:** We studied prospectively 48 cases of suspected liver abscesses admitted to our institute over 3 years (February 2011 to February 2014). Daily follow up of patients was carried out in hospital for at least 10 days. Patients were later followed up by ultrasound after discharge. **RESULTS:** We found the clinical features of the disease similar to those mentioned in essential text books of medicine, except that pain is not always epigastric while fever may be absent and hepatomegaly is not marked. Ultrasound is a simple, cheap diagnostic test, which is available. Metronidazole is an effective treatment and five of the patients required invasive method for diagnosis or treatment. **CONCLUSION:** Amoebic liver abscess if untreated is a serious disease. We concluded that recognizing the disease clinically and proving it by ultrasound is the main method for diagnostic confirmation.

KEYWORDS: Abscess, Amoebic, liver, USG.

INTRODUCTION: Infestations with the protozoan *Entamoeba histolytica* are worldwide in distribution but more common throughout the tropical and sub-tropical areas. It is a major problem in Indians, amoebic liver abscess (ALA) is the most frequent extra intestinal complication. Poor hygiene, contaminated drinking water, malnutrition, hepatic dysfunction, low host resistance, alcohol intake, delayed or inadequate treatment are all responsible for the disease in the lower socioeconomic group.

This prospective study was carried out on 48 consecutive patients of ALA admitted to a rural referral hospital in North India. Our experience is presented in this article.

METHODS: Forty eight consecutive patients suffering from ALA admitted to our hospital from February 2011 to February 2014 were included in the study. All the patients were subjected to a thorough clinical examination after obtaining a detailed history. The diagnosis was based on clinical examination and ultrasonography study. One or more lesions in the liver with characteristic features of ALA were seen on ultrasound examination.

RESULTS: The age of the patients varied from 18 to 65 years. The peak incidence was in the second and third decades of life accounting for 24 patients (50.00%) of total case studies (Table 1).

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Age (years)	Males	%	Females	%	Total	%
<20	5	10.41	0	0	5	10.41
21-30	10	20.83	2	4.16	12	25.00
31-40	10	20.83	2	4.16	12	25.00
41-50	6	12.50	3	6.25	9	18.75
>50	8	16.66	2	4.16	10	20.83
Total	39		9		48	

Table 1: Age & sex distribution of patients with ALA

ALA occurred predominantly in males 39/48 (81.25%). A history of previous intestinal amoebiasis was present in only six patients (12.50). 32 (66.66%) patients consumed alcohol mostly liquor prepared locally. Such patients had large abscesses and poor general health. Pain in the abdomen (79.16%) and fever (64.58%) were the most common symptoms at presentation and tender hepatomegaly (85.41%) and intercostals tenderness (72.91%) were the most signs (Table 2).

Symptoms		Number of patients	Signs	Number of patients	
Abdominal pain	38	79.16	Hepatomegaly	41	85.41
Fever	31	64.58	Intercostal tenderness	35	72.91
Anorexia	25	52.08	Icterus	8	16.66
Nausea	19	39.58	Respiratory signs	4	08.33
Jaundice	8	16.66	Acute abdomen	4	08.33
Diarrhea	6	12.50	Ascites	2	04.16
Cough with expectoration	4	08.33			

Table 2: Presenting manifestations of Patients with ALA

Icterus was observed in 8 (16.66%) patients and 2 (04.16%) patients had signs of pneumonia or pleural effusion at presentation. 6(12.50%) patients and 4(08.33%) patients had signs of pneumonia or pleural effusion at presentation. 6 (12.50%) patients presented with features of acute abdomen with signs of localized peritonitis.

Laboratory studies showed a neutrophilic leukocytosis and elevated sedimentation rate in 24 and 30 patients respectively. A normocytic normochromic or microcytic anemia was seen in 18 (37.50%) patients. Though the transaminase level (ALT and AST) was elevated in only 16(33.33%) patients, the serum alkaline phosphatase level was elevated in 30(62.50%) patients.

	Number of Patients	Percentage
Leukocytosis	24	50.00
Elevated ESR	30	62.50
Hb< 10gm%	18	37.50
S. bilirubin > 1.0 mg/dl	7	14.58
Elevated AST, ALT	16	33.33
Elevated Alkaline Phosphatase	30	62.50

Table 3: Laboratory findings in patients with ALA

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An ultrasound scan was done in all patients and in 41(85.41%) patients an abscess was found in right lobe, whereas in 3 (06.25%) patients the left lobe was involved. In 4 (08.33%) patients both lobes were involved (Table 4). The abscesses varied in size from 2cm to 15cm in diameter. Five patients had abscess size more than 6cm in diameter.

Findings	Patients	Percentage
Hepatomegaly	43	89.58
Situation of abscess		
Right lobe	41	85.41
Left lobe	3	06.25
Both lobes	4	08.33
Number of Abscesses		
Single	43	89.58
Multiple	5	10.41
Size of abscess		
<6.0 cms	43	89.58
>6.0 cms	5	10.41

Table 4: Ultrasonographic findings in patients with ALA

Anti-amoebic drug metronidazole alone was given to 43 (89.58%) patients, 5 (10.41%) patient underwent percutaneous ultrasound guided needle aspiration in addition to drugs, and none of patient required surgical drainage. Aspiration of the abscess was carried out under strict aseptic conditions. Aspiration was done in those with larger abscesses (>6cm diameter), high fever and toxemia, no response to drugs therapy.

The patients were evaluated clinically and by ultrasound on admission, on the following 15th day and subsequently at one, three and six months. There was a rapid clinical response in aspirated group, especially in patients with an abscess more than 6cms in diameter. In two patients, the temperature settled to near normal levels after aspiration. Ultrasound after 15 days of initiation of treatment showed significant improvement in the group treated with aspiration but resolution of the abscess was similar after 6 months.

There were no complication in any of the 5 patients subjected to aspiration and subsequently none needed surgical drainage. Although all the patients were asymptomatic after 6 months, ultrasound examination showed that 12(25.00%) patients still had a residual abscess cavity.

DISCUSSION: Amoebic liver abscess is widely prevalent in the Indian subcontinent.^{1,2,3} In this study the most common age affected was the 20-50years old group and male to female ratio was 4.85:1. Similar results have been obtained by other workers.^{3,4} There was a strong association with alcohol intake in 62.50% of the patients. Alcohol is believed to be one of the predisposing factors in the pathogenesis with statistics showing a more than five-fold incidence of ALA among drinkers.⁵

With history of alcoholism in 85% of the patients with ALA, Joshi et al⁶ found a high mortality rate in those consuming large quantities of alcohol.

We found that alcoholics had larger abscesses, greater frequency of complication and delayed resolution of abscesses. Alcohol acts in several ways:

- a) Hepatic damage by the alcohol predisposes to organ invasion. An amoebistatic substance produced by the normal liver is depressed in alcoholics.

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- b) Habitual drinkers often neglect food which causes malnutrition resulting in lowering body resistance and suppression of liver function.
- c) Liquor prepared locally with no regard for asepsis has a large population of amoebae in it.
- d) Alcoholics have poor hygiene which fits with the mode of infection, i.e. faeco-oral.
- e) Immunity in chronic alcoholics is depressed.

The most common symptom was abdominal pain and hepatomegaly the most common sign as reported by other workers.^{1,6,7} We found intercostals tenderness in 72.91% of patients, a reliable sign, not as frequently reported in earlier.^{4,8} It is a valuable clinical sign of ALA. Incidence of jaundice varied from 1% to 17% in different studies.^{1,4,9,10}

We found icterus in 8(16.66%) patients. Liver transaminase (AST and ALT) levels were elevated in 16(33.33%) patients and serum alkaline phosphatase was elevated in 30(62.50%) patients. Elevated alkaline phosphatase levels have also been reported by several workers.^{11,12,13}

Ultrasound provides valuable high precision information on location, size and number of ALA as well as detection of established and possible imminent complication. Majority of the abscesses 41/48(85.41%) were in right lobe. Majority of our patients had a single abscess except in five patients (10.41%) who had multiple abscesses as reported by others.¹⁴

We found that needle aspiration combined with chemotherapy represents a successful therapeutic approach in the treatment of ALA was required only in five patients (10.41%) who had abscess cavity size more than six centimeters, rest of the patients did not require it and does not seem to be necessary.^{14,15} Serological tests, such as ELISA and IFAT, though highly reliable in the diagnosis of extra-intestinal amoebiasis, are not available in most hospital in India and needle aspiration provides an economic and safe alternative.

After following up even after six months 12(25.00%) patients had a residual abscess cavity on ultrasound examination. It has been shown that complete resolution of ALA may take years.^{5,13} This is important in the differential diagnosis of space occupying lesions in the liver, especially in those areas with a high incidence of ALA and hepatocellular carcinoma.

Although a large amount of liver tissue appears of be destroyed, the resident liver damage is clinically, biochemically and microscopically minimal. The liver has a great power of near complete regeneration provided ALA is treated timely and adequately. There was no mortality in our patients due to early presentation and proper treatment which was started immediate after diagnosis, but generally a mortality of 10-20% had been reported in different series.^{10,16}

CONCLUSION: Amoebic liver abscess (ALA) is the most common extra-intestinal complication of amoebiasis in Indians affecting the young and middle aged men of lower socio-economic group. Prompt treatment results in improved survival and lower morbidity. Ultrasound is simple and cheap diagnostic test in the management of ALA.

REFERENCES:

1. Kini PM, Mammi MKI. Hepatic Amoebiasis in Kerala. J Ind Med Assoc 1970; 55: 7-9.
2. Ganesan TK, Palani PM. Amoebic liver abscess. J Ind Med Assoc 1971; 548: 108-10.
3. Mehta AJ, Vakil BJ. A clinical study of 158 cases of amoebic liver abscess. Ind J Med Sci 1970; 74: 478-80.

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4. Hai AA, Singh A, Mittal VJ. Amoebic liver abscess. Review of 220 cases. *Int Surg* 1991; 76: 81-3.
5. Sharma MP, Rai RR, Acharya SK. Needle aspiration of amoebic liver abscess. *Br Med J* 1989; 299: 1308-9.
6. Joshi VR, Kapoor OP, Purohit AV. Jaundice in amoebic abscess of liver. *J Assoc Phy India* 1972; 20: 761-4.
7. De Bakey ME, Jordan GL. Hepatic abscess, both intra and extrahepatic. *Surg Clin North Am* 1977; 57: 325-34.
8. Basile JA, Klein SR, Worthen NJ. Amoebic liver abscess. The surgeon's role in management. *Am J Surg* 1983; 146: 67-71.
9. Abuabara SF, Barrett JA, Hau T. Amoebic liver abscess. *Arch Surg* 1982; 117: 239-44.
10. Thompsen Jr JE, Glasser AJ. Amoebic abscess of the liver. Diagnostic features. *J Clin Gastroenterol* 1986; 8: 550-4.
11. Gupta RK, Amoebic liver abscess: A report of 100 cases. *Int Surg* 1984; 69: 261-4.
12. Thamlikitkul V, Yamwong P. Liver abscess: A clinical study of 222 patients. *J Med Assoc Thai* 1990; 73: 264-8.
13. Gibney EJ. Amoebic liver abscess. *Br J Surg* 1990; 77: 843-4.
14. Sharma MP, Dasarathy S. Amoebic Liver Abscess. *Trop Gastroenterol* 1993; 14: 3-9.
15. Fujihara T, Nagai Y, Kubo T, Seki S, Satake K. Amoebic liver abscess. *J Gastroenterol* 1996; 31: 659-663.
16. Barbour GL, Juniper K. A clinical comparison of amoebic and pyogenic abscess of the liver in 66 patients. *The American Journal of Medicine* 1972; 53: 323-324.

AUTHORS:

1. Pawan Tiwari
2. Monu Sarin
3. Madhu Tiwari

PARTICULARS OF CONTRIBUTORS:

1. Associate Professor, Department of Surgery, Faculty of Medicine and Health Sciences, SGT University, Budhera, Gurgaon, Haryana, India.
2. Assistant Professor, Department of Radiology, Faculty of Medicine and Health Sciences, SGT University, Budhera, Gurgaon, Haryana, India.
3. Associate Professor, Department of Anaesthesia, Faculty of Medicine and Health Sciences, SGT University, Budhera, Gurgaon, Haryana, India.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Pawan Tiwari,
A-104, Medical Campus,
SGT University, Budhera,
Gurgaon, India.
E-mail: tiwaripawan58@gmail.com

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