

## A Study of Treatment of Outcomes of Liver Abscess in a Tertiary Care Hospital

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**Abstract: Introduction:** Hepatic or liver abscesses are infectious, space occupying lesions in the liver; the two most common abscesses being pyogenic and amoebic. Pyogenic liver abscess (PLA) is a rare but potentially lethal condition, with a reported incidence of 20 per 1,00,000 hospital admissions in a western population. Its severity depends on the source of the infection and the underlying condition of the patient. Amoebic liver abscesses (ALA) are common in tropical regions mainly where 'Entamoeba histolytica' is endemic and is more prevalent in individuals (mostly young males) with suppressed cell mediated immunity.

**Materials and Methods:** The present study was conducted at Tagore Medical College, Rathinamangalam, Chennai, during the period from January 2017 to December 2019. The patients included in the study were informed about the proposed study and informed consent was obtained from each patient. All the data obtained from medical records was entered into a proforma questionnaire. At analysis, each item in the questionnaire was analysed separately using the tally method. Statistical analysis was done using mean, averages, Chi-Square and Fisher Exact test to find the significance of proportion wherever applicable using MS Word, Excel and online Graph Pad 3.0 and results compared with the background of recent available literature. Different data presentation methods (Pie charts, bar charts, etc.) were used for all the study parameters and presented in the results.

**Results:** Pyogenic liver abscess (PLA) was the most common (64%) type of liver abscess among the study group. The most common aetiology of pyogenic liver abscess was *Escherichia coli*. Ultrasonography (USG) of the abdomen was accurate and cost effective in diagnosis of liver abscesses. Percutaneous catheter drainage (PCD) was the most effective method of treatment. Right lobe was predominantly involved in amoebic and pyogenic abscesses.

**Conclusion:** In developing countries like India, the clinical presentation of liver abscess has not varied over time. At present, rapid diagnosis and image guided percutaneous drainage offer a better prognosis for liver abscess. Appropriate use of minimally invasive drainage techniques reduces mortality. We suggest early recognition of clinical features and prompt abdominal USG as cost-effective means for treatment initiation and reducing complications.

**Key Words:** liver abscesses, PLA, USG

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### I. Introduction

Hepatic or liver abscesses are infectious, space occupying lesions in the liver; the two most common abscesses being pyogenic and amoebic.<sup>1</sup> Pyogenic liver abscess (PLA) is a rare but potentially lethal condition, with a reported incidence of 20 per 1,00,000 hospital admissions in a western population. Its severity depends on the source of the infection and the underlying condition of the patient. Amoebic liver abscesses (ALA) are common in tropical regions mainly where 'Entamoeba histolytica' is endemic and is more prevalent in individuals (mostly young males) with suppressed cell mediated immunity.<sup>2</sup> ALA is the most common extra intestinal site of infection but occurs in only less than 1% of *E. histolytica* infections. ALAs are 3 to 10 times more common in men. Patients commonly affected are between 20 to 40 years of age with residence in, recent travel to or emigration from an endemic region. Liver abscess is an important clinical problem in tropical regions of the world and accounts for a high number of hospital admissions.<sup>3</sup>

It is usually an easily treatable condition with good clinical outcomes. There is however potential for morbidity and even mortality if proper and timely treatment is not provided. The standard treatment of liver abscess is the use of appropriate antibiotics and supportive care.<sup>4</sup> Needle aspiration can be used as an additional mode of therapy. It is suggested that needle aspiration can improve response to antibiotic treatment, reduce

hospital stay and the total cost of treatment. Although ultrasound guided needle aspiration is fairly safe, it is nonetheless an invasive procedure, and can be associated with the risk of bleeding.<sup>5</sup>

The present study was conducted to assess the etiological & predisposing factors, variation in clinical presentation in liver abscesses, role of antibiotics (conservative management) in management of small liver abscess, role of USG guided aspiration and percutaneous tube drain-age and role of surgical intervention in liver abscess.

## **II. Materials And Methods**

The present study was conducted at Tagore Medical College, Rathinamangalam, Chennai, during the period from January 2017 to December 2019.

Institutional approval of the study protocol was obtained and the patients included in the study were informed about the proposed study and informed consent was obtained from each patient.

### **Inclusion Criteria**

1. All cases of liver abscess diagnosed clinically and ultra sonographically.
2. All cases of bacterial and parasitic liver abscess.
3. All cases in evolving, liquefied & ruptured stage with or without peritonitis.
4. All cases of clinical liver abscess with elevated total leucocyte count (TLC), LFT, and serologically amoebic antigen positive.

### **Exclusion Criteria**

1. Traumatic Liver Abscess.
2. Past history of liver abscess.
3. Associated with malignancy.

The diagnosis of liver abscess was made based on history, clinical features, laboratory investigations, radiology, serological investigations, blood culture, and culture from the aspirate. Patients were treated with medical treatment with or without one of the following-percutaneous needle aspiration, percutaneous catheter drainage or open surgical drainage. Cure was defined as improvement clinically with subsidence of fever, and local signs, symptoms, decrease in WBC count and follow-up ultrasonography showed reduction in size <3 cm in diameter and no evidence of relapses.

The patients are asked to attend surgical outpatient department after 6 weeks and repeat sonography of abdomen is done to know resolution of the abscess.

All the data obtained from medical records was entered into a proforma questionnaire. At analysis, each item in the questionnaire was analysed separately using the tally method. Statistical analysis was done using mean, averages, Chi-Square and Fisher Exact test to find the significance of proportion wherever applicable using MS Word, Excel and online Graph Pad 3.0 and results compared with the background of recent available literature. Different data presentation methods (Pie charts, bar charts, etc.) were used for all the study parameters and presented in the results.

## **III. Results**

Of the total 50 patients screened, 32 (64%) had PLA and 15 (36%) had ALA. The major epidemiological findings and clinical features recorded were as follows:

### **Radiology**

a. Amoebic liver abscess-chest X-ray was abnormal in 44.44% patients. Ultrasonogram of the abdomen showed right lobe involvement in 88.88% cases and left lobe involvement in 11.11%. In 77.77% patients, the abscess was single and in 22.22% it was multiple. About 77.77% patients had abscess cavity with size between 5-10 cm, 5.55% with size <5 cm and 16.66% with size >10 cm.

b. Pyogenic-chest X-ray was abnormal in 68.75% patients. Ultrasonogram whole abdomen showed right lobe involvement in 75% cases, left lobe in 12.5% cases, and both lobes in 12.5%. The abscess was single in 53.12%, multiple in 46.87% cases. About 37.5% patients had abscess cavity with size between 5-10 cm, 21.87% with size <5 cm and 40.62% with size >10 cm.

### **Blood and Culture Aspirate**

Microbiological confirmation was done in 26 cases out of 32 cases of PLAs. In 4 cases, size of abscesses was less than 2cm so it was not done, and in another two cases abscess was very thick and organized so it was not done. Aerobic culture at 37°C for 48hours revealed growth of E.coli in 7 cases (21.87%), it was the most common organism cultured in our study. Klebsiella Pneumoniae and Staphylococcus Aureus were other organism cultured in 4(12.5%) and 1(3.12%) case respectively. In 14(43.75%) cases, culture showed no growth.

Out of 18 cases of ALAs, amoebic serology (IgG antibody) was found to be positive in 16 cases (88.88%) and negative in 2 cases (11.11%).

### Treatment Outcome

Of 18 patients with ALA, 11 patients were treated with medical or conservative treatment with a success rate of 91.66%, 4 patients were treated with percutaneous needle aspiration with a success rate of 100%, 3 patients were treated with percutaneous catheter drainage and the success rate of this procedure was 100%. No complications were observed in the present study. None of the patient had to undergo surgical intervention. There was no mortality. Of the 32 patients of PLA, 6 were treated conservatively, 1 was treated with percutaneous needle aspiration with the success rate of 100% after 3rd attempt, and 24 patients were treated with percutaneous catheter drainage with the success rate of 100%. In one case, laparotomy was done for intraperitoneal rupture of a liver abscess, the patient died on 3rd post-operative day due to multiorgan failure.

Demographic Parameter	PLA	ALA
No of patients (%)	<b>32 (64%)</b>	<b>18 (36%)</b>
Male: Female	<b>20:12 (1.66:1)</b>	<b>12:6 (2:1)</b>
Age wise Distribution %		
21-40	<b>7 (21.87)</b>	<b>14 (77.77)</b>
41-60	<b>18 (56.25)</b>	<b>1 (1.55)</b>

**Table 1: Comparison of Demographic Data between the Two Study Groups**

Symptoms/Signs	PLA (%)	ALA (%)
<b>Abdominal pain</b>	29 (90.62)	18 (100)
<b>Fever</b>	30 (93.75)	18 (100)
<b>Weight loss</b>	4 (12.5)	0
<b>Vomiting</b>	5 (15.62)	5 (22.22)
<b>Diarrhoea</b>	0	4 (22.22)
<b>Cough</b>	8 (25)	5 (27.77)
<b>jaundice</b>	7 (21.87)	4 (22.22)
<b>Right upper quadrant tenderness</b>	13 (40.62)	10 (55.55)
<b>Hepatomegaly</b>	11 (34.37)	14 (77.77)

**Table 2: Comparison of Sign and Symptoms between Two Groups**

Investigations	PLA (%)	ALA (%)
<b>Leukocytosis(&gt;12,000)</b>	15 (46.87)	8 (44.44)
<b>Hb% &lt;10 g</b>	23 (71.87)	8 (44.44)
<b>Bilirubin &gt;2.4 mg/dL</b>	7 (21.87)	4 (22.22)
<b>ALKP Raised</b>	20 (62.5)	10 (55.55)
<b>SGOT Raised</b>	20 (62.5)	13 (72.22)
<b>SGPT Raised</b>	17 (53.12)	10 (55.55)
<b>PT &gt;16 Sec</b>	9 (28.12)	6 (33.33)
<b>RBS &gt;200 mg/dL</b>	4 (12.5)	0
<b>S Albumin &lt;3 g/dL</b>	24 (75)	9 (50)

**Table 3: Comparison of Laboratory Investigations between Two Groups**

## IV. Discussion

In our study, the maximum age incidence for ALA was 21-40 years, with male:female ratio of 2:1, [Table 1] which is consistent with previous reports. Among PLA patients, the maximum age incidence was 41-60 years, with male:female ratio of 1.66:1 which is consistent with other reports.<sup>6</sup>

Smith EH et al (1974) noticed a success rate of 85%, whereas Giorgio et al (1995) observed the success rate of 98.3% in needle aspiration group. Percutaneous catheter drainage group had success rate of 100% and 0% mortality. Wong et al (2009) reported success rate of 94% in PCD group. Out of 32 cases of PLA, 1 death was reported. It was a case of intraperitoneal rupture of a liver abscess, who underwent surgical management. The patient died on 3rd post-operative day due to multiorgan failure.<sup>7</sup>

Out of 18 cases of ALA, 11 cases (61.1%) were managed exclusively by drug therapy; other 3 cases (16.66%) were treated by combination of drugs and percutaneous catheter drainage (PCD). Another 4 cases (22.22%) were treated by percutaneous needle aspiration (PNA).<sup>8</sup>

Out of the 12 cases, who were managed conservatively (Drug therapy alone), 11 cases responded very well within 4 to 6 days, with success rate of 91.66%.<sup>9</sup> 4 cases were treated with PNA and 3 cases were drained by pigtail catheter, with the success rate of 100%. In the present study, needle aspiration after first attempt was successful in 1 case (25%) only. Rest required multiple attempts which were similar to other report. None of ALA patients underwent surgical exploration.<sup>10</sup>

## V. Conclusion

Liver abscesses are found to be an important and serious problem in surgical practice in this part of the country, as in other part of the world, because of its obscure nature in the terms of clinical presentation and delayed diagnosis in many instances. Delayed diagnosis and treatment can lead to increased mortality, morbidity, and significant economic impact. Pyogenic liver abscess is found to be common in 5th decade of life, whereas amoebic liver abscess is common in 3rd decade and 4th decade of life. Incidences are little higher in males for both types of abscesses. Early diagnosis and treatment is of paramount importance. A high index of clinical suspicion and repeated and diligent search for unusual signs are required for the diagnosis as most of the bacteriological, haematological and biochemical investigations are nonspecific for intra-abdominal abscesses and give only clues to the infective process and severity of illness. Ultrasonography is the first radiological procedure to be performed and is sufficient. In the both PLAs and ALAs, most of the lesions are solitary and situated in the right lobe of liver.

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