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Original Research Article

Study to Analyse Clinical Presentation, Diagnosis and Outcomes of Liver Abscess in Tertiary Care Center

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Abstract:

Background: Liver abscesses, both amoebic and pyogenic, remain a major health problem in tropical regions, causing significant morbidity and mortality. Although medical therapy is the mainstay, a subset of patients require interventional drainage. With the advent of ultrasonography and CT-guided techniques, minimally invasive percutaneous drainage has replaced traditional surgical methods due to lower morbidity and higher success rates.

Aim: To analyze the clinical presentation, risk factors, diagnostic methods, and evaluate the effectiveness of different modes of management of liver abscess in a tertiary care center.

Methodology: A prospective observational study was conducted on 30 patients admitted with liver abscess to the Department of General Surgery, ACSR Medical College and Hospital, between July 2024 and August 2025. Detailed clinical assessment, laboratory investigations, and ultrasonography were performed. All patients received parenteral antibiotics, and those not responding within 48–72 hours underwent ultrasound-guided percutaneous catheter drainage (PCD). Patients were followed up for three months with serial ultrasonography.

Results: The mean age of patients was 49.5 years, with a male predominance (96.7%) and a strong association with alcoholism (88%). The right lobe was involved in 73.3% of cases, and 73.3% had a single abscess. Twenty-eight patients (93.3%) were managed successfully with PCD, while two smaller abscesses (<3 cm) responded to medical therapy alone. The overall success rate was 100%, with no mortality. Pleural effusion was the most common complication (20%).

Conclusion: Ultrasound-guided percutaneous catheter drainage combined with appropriate antibiotics is an effective, safe, and minimally invasive method for managing liver abscess, significantly reducing morbidity and hospitalization.

Keywords: Liver Abscess, Percutaneous Catheter Drainage, Ultrasonography, Amoebic Abscess, Pyogenic Abscess.

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Introduction

Liver abscesses, both amoebic and pyogenic, continue to be an important cause of morbidity and mortality in tropical countries. The advances in radiology like ultrasonography and CT scan since last 30 years including imaging and interventional techniques resulted in introduction of radiological guided aspiration and drainage of intra- abdominal abscesses.

The primary mode of treatment of amoebic abscess is medical; however many cases may be refractory to medical therapy. Also secondary bacterial infection may complicate 20% of amoebic liver abscess. In such patients and patients with pyogenic liver abscesses, aspiration has been the traditional mode of treatment. Operative drainage is associated with significant (10 to 47%) mortality and morbidity. In recent years, imaging guided percutaneous drainage has been increasingly used to treat liver abscess with reported success rates ranging from 70 to 100%, surgical intervention is typically unnecessary.

Percutaneous placement of an indwelling catheter is the method most widely preferred to drain the liver abscesses. [2] Also few studies have shown therapeutic needle aspiration to be a simpler and less costly mode of treatment, but needs repeated aspiration, with more failure rates. [1-8]

Aim: The aim of study is to analyse clinical presentation, risk factors, diagnosis and effectiveness of different modes of management liver abscess in tertiary care center.

Materials and Methods

A prospective observational study was conducted on 30 patients admitted with liver abscess to the Department of General Surgery, ACSR Medical College and Hospital, between July 2024 and August 2025. Patients aged 18 years and above of either sex were included in the study and patients above 18 years, Malignancy of hepatobiliary system were excluded.

Patients presented with Pain abdomen (upper - RUQ), Fever with Chills, Cough with right lower chest pain, History of chronic alcoholism, Tender hepatomegaly, Right basal pleural and pulmonary pathology, Jaundice. Other symptoms like loss of weight, hicoughs, right shoulder pain, diarrhea, nausea/vomiting and distention of abdomen with any of the above signs and symptoms were subjected to ultrasound abdomen examination.

USG abdomen was done, using longitudinal, oblique, transverse planes to visualize almost all part of liver. Intercostal and sub costal planes were used. All the liver lesions suggestive of liver abscess were examined in detail (other abdominal organs were also scanned for any abnormalities). Gross morphology of liver abscess was examined in detail with special attention to following. Size of liver assessed for hepatomegaly, Number of abscess and their locations were identified in relation to lobes/segmental anatomy of liver, The contiguity of abscess to the liver capsule was noted, Size and volume of abscess described, Echogenecity of the abscess assessed, (hyperechoic, hypoechoic, anechoic).

Routine blood examination like haemoglobin %, RBS, blood urea, serum creatinine, total count, differential counts were done. Urine, stool, liver function tests and chest x-ray including upper abdomen radiographs were done.

With good history, clinical head to toe examination, radiological and ultrasound abdomen investigation and provisional diagnosis of liver abscess was made. Diagnostic criteria are quoted below. All patients were hospitalized and depending upon hydration status hydrated and started on parenteral Ciprofloxacin/Third generation cephalosporin and Metronidazole therapy.

Patient responding to treatment like (within 24-48 hours) Improvement in general condition, increase in severity of pain abdomen, Decrease in fever Diagnostic criteria considered in this study-- Compatible history (with history of alcoholism), Tender enlarged liver, Radiological evidence of raised dome of diaphragm, USG abdomen – specific finding with regard to liver abscess, Response to Antibiotic therapy, Demonstration of anchovy sauce pus and microbiological examination of pus or bacteria in gram stain.

A certain number of cases that were not responding to parenteral antibiotics therapy within 48-72 hours were subjected to ultrasound guide diagnostic drainage, which showed either characteristic anchovy sauce pus or purulent yellowish pus, which confirms the diagnosis further catheter drainage was done.

In the present study per cutaneous drainage catheter PCD catheter (malecot's) was used for drainage of liver abscess.. The catheter of size 10 to 12 Fr was placed in 8th, 9th or 10th intercostal space, or the site as guided by the ultrasonography under local anesthesia using seldinger's technique.

Patient in supine position, 2% lignocaine was used for local infiltration; an 18- gauge needle used to aspirate the contents of the cavity and sent for examination. A small nick was made at entry site of needle; a guidewire was passed well inside the cavity slowly withdrawing the needle. Now the tract was dilated using dilators of required sizes. Catheter was placed in the cavity slowly withdrawing the guide wire; catheter was fixed to the skin and connected to a collecting bag. Culture and sensitivity and Gram stain of the pus was done. Pus was also examined for Trophozoites. Patient's vitals are monitored for 24 hrs.

Follow up was done using ultrasonography to note the shrinkage in size of the cavity every 4th or 5th day. Removal of catheter was decided based on the amount of pus drained (<50 ml for three consecutive days). Relief of symptoms and sonological evidence of collapsing cavity or decrease in the size of cavity. Patients were followed up weekly for 1 month and monthly for next 3 months repeating ultrasonography. Treatment was considered successful if the following criteria were met-- The patient improved clinically with subsidence of pain, fever and other symptoms. The imaging of liver showed resolution of the abscess.

Results

Table 1: Distribution of participants according to Age & Sex

Age Group in Years	Frequency	Percentage
20-30	3	10
31-40	6	20
41-50	7	23.3
51-60	4	13.3
61-70	7	23.3
>70	3	10
Total	30	100
Female	1	3.3
Male	29	96.7

History of alcoholism: Ochsner and De Bakey attribute higher incidence of alcoholism in males, which predisposes hepatitis and trauma. In our series it is at 88% and it is more common in persons who consumed alcohol more than 40 years.

Table 2: various symptoms in liver abscess in participants

Symptoms	Frequency	Percentage
Abdominal Pain	15	50
Abdominal Pain & Fever	11	36.7
Abdominal Pain, Fever, Chills	2	6.7
Abdominal Pain & Vomiting	2	6.7
Total	30	100

Table 3: Investigations

Investigations	Frequency	Percentage
USG, LFT, Hemogram	22	73.3
USG, LFT, Hemogram, CT	8	26.7
Total	30	100

Table 4: Abscess Location, Size and Number

Abscess Location	Frequency	Percentage
Right	22	73.33
Left	4	13.33
Both	4	13.33
Total	30	100
Single abscess	22	73.3
Multiple abscess	8	26.7
<3	1	3.33
3-5	8	26.66
6-10	14	46.66
>10	6	20
Ruptured	1	3.33

Management: In Our study 28 cases of liver abscess were treated with percutaneous catheter drainage procedure. (PCD), 2 cases where abscess size <3cm treated –conservatively (drug therapy alone), and none of the case required surgery.

Complications: In the study, right pleural effusion was noted in 20% (6 cases) rupture into peritoneal cavity in 3.3% (1 case) and Ascites in 3.3% (1 case)

Table 5: Pus Culture Sensitivity & Organisms noted

Pus Culture Sensitivity	Frequency	Percentage
No Growth	27	90
Growth	3	10
Pus cells	27	73.33
Gram negative bacilli	3	10

Discussion

Of 30 cases of liver abscess, mean age group of the patient was 49.5 (18 to 80 years) male to female ratio was 5.5:1. A similar study conducted by Kapoor et al which showed a male to female ratio of 5.7:1.5. Pyogenic and Amebic abscess were more common in right lobe of liver seen in 95%. A

similar study conducted by Makkar RP et al, shows a higher predilection to right lobe of liver probably attributed to the portal circulation. Majority of population were suffering from pain (50%) at the time of presentation and fever associated with chills and rigor in (36.7%) Similar Study carried by Mohsen et al, showed that 48% pyogenic hepatic abscesses, 67% amoebic liver abscess presented with fever. Study by Angelica et al found - E. coli, Klebsiella, as most frequent organism. Similarly in our study, 3 cases (10%) were monomicrobial with E. coli, f/b Staphylococcus aureus.

In this study all cases of pyogenic liver abscess were treated with PCD procedure & amoebic liver abscess were managed with antiamoebic drugs. A study conducted by Naveed et al, all pyogenic liver abscess required some form of drainage. Amoebic liver abscess patients were treated with drug therapy alone.

In our study 6 cases (20%) had pulmonary complications (pleural effusion), resolved with medical therapy), 1 case (3.33%) had ruptured abscess leading to peritonitis treated with PCD. A similar study by Mukhyopadhya et al report pleuropulmonary involvement in 24% and peritonitis cases in 26.39%.

Conclusion: Radiological guided per cutaneous drinage, and use of effective antibiotic therapy is successful in management of liver abscess with minimal morbidity and no mortality. PCD is more effective than PNA because it facilitates a higher success rate, reduces the time required to achieve clinical relief and supports a 50% reduction in abscess cavity size.

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