



ORIGINAL RESEARCH PAPER

General Surgery

CLINICAL, LABORATORY AND MANAGEMENT PROFILE IN PATIENTS OF LIVER ABSCESS IN TERTIARY CARE CENTER, CIVIL HOSPITAL AHMEDABAD

KEY WORDS:

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- Liver abscess (LA) is defined as collection of Purulent material in liver parenchyma which can be due to bacterial, parasitic, fungal, or mixed infection.
- It is a common condition across the globe. Out of total incidence of LA, approximately 2/3 of cases in developing countries are of amoebic aetiology. Amoebiasis is presently the third most common cause of death from parasitic disease.
- The condition is endemic in tropical countries like India due to poor sanitary condition and overcrowding. Amoebic liver abscess (ALA) accounts for 3–9% of all cases of amoebiasis.
- Surgical management was the mainstay for treatment earlier. However, recent evidences from percutaneous drainage procedure have shown a favorable outcome with less average length of stay in hospital compared to conservative mode of treatment.
- In this context, precise diagnosis of the abscess etiology is pivotal for appropriate management.
- The concept of the present study was to evaluate the changing trends in clinical profile, microbiological etiology, and management outcomes of patients diagnosed with LA.

MATERIALS AND METHODS

- Study Type: retrospective observational study.
- Place: Department of general surgery, civil hospital ahmedabad, a tertiary care centre.
- Study duration was from JANUARY 2021 to October 2021.
- Total of 50 consecutive patients diagnosed as having liver abscess on ultrasound were included in the study.
- Inclusion criteria were all liver abscess patients needing intervention.
- All patients were subjected to complete hemogram, liver function test, kidney function test, and coagulation profile (PT/INR). Reference ranges of these investigations were defined by the reference ranges of hospital laboratory. Blood cultures were sent. Serologies for HIV, and hepatitis B and hepatitis C viruses were also done.
- All patients were subjected to chest xray.
- After taking informed consent, all patients were subjected to ultrasound guided aspiration of liver abscess either by percutaneous needle or pigtail catheter. Interventions were done after correction of INR below 1.4 to those who presented with coagulopathy. We preferred pigtail catheter in single, large (>10 cm), deep seated, and partially liquefied abscess. In multiple, small (5–10 cm), superficial, and fully liquefied abscesses, we tend to use percutaneous catheter. Aspirate was collected in sterile containers and sent to Microbiology Department for microscopic examination.
- Discharge criteria were considered as normalization of hemodynamic status with defervescence of the presenting complains.

RESULTS

Demographics

- The mean age of the patients: 43 years (range: 14 to 78 years).
- Male to female ratio was 5.25:1.
- About two thirds of the patients (33) were from lower socioeconomic class.

Risk factors

Alcoholic	76%
Diabetic	8%
Viral hepatitis	2%
HIV	2%

MOST COMMON SIGNS AND SYMPTOMS

Symptoms	Percentage
Abdominal pain	98%
Fever	94%
Anorexia	92%
Nausea/vomiting	54%
Diarrhoea	22%
Cough	16%
Weight loss	40%

Signs	Percentage
Hepatomegaly	88%
Pallor	38%
Jaundice	26%
Splenomegaly	10%
Ascites	10%

- Pain abdomen was the most common symptom (98%; n = 49).
- Tender hepatomegaly was the most common per-abdominal examination finding. (88%; n=44).

LABORATORY PARAMETERS

Parameters	Mean ± SD	Out of range cut off	Out of range percentage
ESR	44 ± 28 mm 1st hr	>20 mm in 1st hour	72%
Hb %	11.0 ± 1.9 gm/dL	<11 gm/dL	40%
TLC	21*10 ⁹ ± 9104/L	>11*10 ⁹ /L	82%
INR	1.37 ± 0.25	>1.2	76%
S. Bilirubin (Total)	1.80 ± 0.60 mg/dL	>1.3 mg/dL	26%
SGOT	80 ± 137 IU/L	>50 IU/L	46%
SGPT	70 ± 67 IU/L	>50 IU/L	42%
ALP	650 ± 446 IU/L	300 IU/L	78%
Albumin	2.9 ± 0.56 g/dL	<3.5 g/dL	82%

Urea	50 ± 36.8 mg/dL	>45 mg/dL	28%
S. creatinine	1.8 ± 0.24 mg/dL	>1.5 mg/dL	30%

- All parameters, particularly those related to liver were deranged in good percentage of patients.
- Parameters related to renal function like S. urea and creatinine were deranged in 1 out of three patients.
- Sepsis indicators like raised TLC and low albumin were present in more than three-fourths of patients.

Radiological findings

Lobes involved

Right	76%
Left	18%
Bilateral	6%

Segments involved

VII	36%
VI	20%
VIII	14%
V	10%
IV	10%
Rest	10%

Number of Abscess

solitary	66%
Few<3	10%
Multiple>3	24%

- Typhlitis was present in 30% patients.
- right lobe solitary abscess was the most common pattern.
- Ascites was present in 40%.
- Segments 7 and 6 were the most common sites of abscess.
- Mean abscess vol. ± SD was 300 ± 205 cc. Using multivariate regression analysis, volume of abscess was found to be directly proportional to the levels of serum alkaline phosphatase (p = 0.041) and inversely to haemoglobin (p = 0.005) levels of the patient.
- Pleural effusion was evident in 30% (n=15) of the patients, predominantly on the right side (24%; n= 12); however, left-sided and bilateral effusions were also encountered in 4% and 6% of patients, involvement of right lobe in these cases was most pre- dominant (76%). The same is true for solitary presentation (66%).
- 10 Patients had subcapsular rupture of abscess while 5 patients had intraperitoneal rupture, 3 patients had intrathoracic rupture of abscess.

INTERVENTION AND MICROBIOLOGICAL PROFILE

Percutaneous needle aspiration	76%
Pigtail drainage	14%
Laparotomy	10%

Nature of pus

Parameter	Percentage
Anchovy sauce	70%
Purulent	30%

Microbiological profile

Positive culture in pus	16%
Ecoli	4%
Klebsiella	4%
Pseudomonas	2%
Acinetobacter	2%
Staphylococcus	2%

- Solitary abscess was more of amoebic in etiology whereas multiple abscesses were associated with pyogenic origin (p = 0.001).
- majority of patients were managed by needle aspiration. Surgical intervention was done in 5 patients, all for rupture.

3 Patients with intrathoracic rupture had undergone right sided intercostal drainage tube insertion.

- 10 out of 15 patients with plural effusion had undergone right sided plural tapping.

Association of various parameters with morbidity and mortality

Mean duration of Hospitalization: 8 ± 5.36 days

Mean duration of Treatment: 33 ± 42 days

Various parameters associated with mortality

parameter	P value
Females	0.001
Duration of fever	0.001
Icterus	0.001
Ascites	0.008
Plural effusion	0.026
Ruptured abscess	0.028

Corelation of various parameters with duration of hospital stay (morbidity indicator)

Parameter	Corelation	P value
Duration of fever	0.15	0.021
ESR	0.15	0.021
INR	0.22	0.043
Albumin	-0.30	0.033

- Duration of hospitalization as a morbidity indicator was proportional to duration of fever (p = 0.02), values of ESR (p = 0.021), and INR (p = 0.043). It was inversely related to serum albumin (p = 0.033).
- Mortality rates were found higher in female patients (p = 0.001), patients having longer duration of fever (p = 0.001), icterus (p = 0.001), ascites (p = 0.006), and pleural effusion (p = 0.028)

DISCUSSION

- 1 Liver abscess (LA) is common in the tropical region like the Indian subcontinent. The common etiological agents for LA are E. histolytica (amoebic), bacterial (pyogenic), Mycobacterium tuberculosis, and various fungi. Out of them, ALA is largely a disease of developing countries like India.
- 1 They tend to affect younger population especially males. Common presenting complains are abdominal pain, fever, and weight loss.
- 1 It is also an important cause of fever of unknown origin.
- 1 Coexisting diarrhoea occurs in 30% patients and it is extremely rare to find amoebic trophozoites in the stool examination.
- 1 In our series also ALA accounted for about three fourths of cases. Most of them were typically right lobe solitary abscess.
- 1 Majority of patient were young alcoholic male (with mean age of 43 years) of lower socioeconomic class.
- 1 The age predisposition and gender differences may be as a result of high alcohol intake by young males which predisposes to ALA. Alcohol suppresses function of Kupffer cells (specialized macrophage) in liver which has important role in clearing amoeba. Moreover, invasive amoebiasis appears to be dependent on the availability of free iron. A high content of iron in the diet, often obtained from the country liquor in habitual drinkers predisposes to invasive amoebiasis, as does a diet rich in carbohydrate.
- 1 Elderly individuals with underlying diseases and patients with compromised immunity due to malnutrition or corticosteroid therapy are also prone to invasion by amoeba. Moreover, The female menstruatrual cycle prevents hepatic congestion and thus makes the organ less susceptible to abscess formation.
- 1 Generally, PLA are associated with predisposing benign or malignant biliary tract or colonic disease: acute cholecystitis, choledocholithiasis, biliary-enteric bypass procedures, chronic pancreatitis, diverticulitis, colonic

perforation, appendiceal abscess, perforated appendicitis, malignant obstruction of the common bile duct, cholangiocarcinoma, pancreatic carcinoma, and carcinoma of the colon. However, recent trend is towards the increase in the frequency of patients with cryptogenic PLA in which no specific lesion predisposing to PLA could be identified even after detailed search .

- In our series, PLA accounted for about quarter of cases. Most of them were multiple and right lobe abscesses. Average age in this group was not different from overall average (43.27 years compared to 43 years overall), respectively. Etiologically, Gram negative organisms commonly inhabiting the gut and biliary microflora were frequently encountered by us, E. coli being the most common Pathogens.. It was in line with previous experiences.
- Mean age in our series was 43 years, which was in accordance with Indian studies. It is because ALA is the predominant aetiology in the Indian scenario, typically involving young alcoholics. In contrast, studies from west where PLA are more common, average age is above 60 years .
- Two-thirds of our patients were from lower socioeconomic class. All of them were alcoholic and thus predisposed to LA.
- patients Most common symptoms of LA are pain abdomen and fever .
- Diarrhea in LA could be due to associated intestinal amoebiasis and could be part of colonics condition predisposing to LA. It is not a common presentation.
- Another uncommon complaint in LA is cough. It is generally due to associated pleural effusion and compression collapse of the underlying lung parenchyma. Other causes are associated parenchyma lesions as in TLA and complications like rupture of abscess in pleural cavity. Pleural effusion was present in 30% of our patients ; all patients with cough belong to this group. Chest radiography helped a little with the diagnosis of LA, except for raised right hemidiaphragm giving some indirect clue of hepatomegaly. Most importantly, they showed associated pleural effusion which was predominantly right-sided in most of our cases. The effusion was generally attributed to reactive pathology as they spontaneously disappeared after treating the abscess.
- Two uncommon signs of LA are jaundice and ascites. But after advent of good antimicrobial therapy, it has become less common.
- Pathogenic processes proposed which can lead to jaundice are sepsis, alcoholic liver disease, hepatocellular dysfunction, associated hepatitis in the adjoining areas, intrahepatic biliary obstruction by the expanding abscess, and biliovascular fistula resulting from hepatic necrosis leading to damage of bile ducts and hepatic veins. However, no biliovascular fistula was detected by ultrasound doppler in any of our case.
- The other sign infrequently associated with LA was ascites can have decompensated chronic liver disease (CLD). Apart from it, cases have been reported where LA cause ascites by compressing the inferior vena cava abdominal ultrasound is still the diagnostic modality of choice for hepatic pathologies including LA. In our study, 6th and 7th segments in right lobe were most commonly involved .
- The predilection of LA in right lobe is because of streaming effect in portal circulation. It receives most of blood draining from right colon, the primary site of intestinal amoebiasis. Colonic conditions predisposing to PLA are also very common in this region. Also, the blood flows volume is more and biliary canaliculi are denser in right lobe thus leading to more congestion.
- Consistent with the latest management strategy of minimally invasive drainage techniques, percutaneous needle aspiration was used in most of patients. Appropriate antimicrobials were added according to the etiological-outcome. However, 10% of the patients had to

undergo surgical intervention as they got complicated by rupture and other associated complications like peritonitis and so forth. Interestingly, average age in this group was 70 years (range: 45 to 78 years), which was more compared to overall average of 43 years.

- Other details of these patients were as follows: 3 of them were female; all of them had icterus and hepatomegaly; 4 patients had pallor and 4 had pleural effusion.
- Laboratory results had greater derangements (mean values): TLC 30000/mL, haemoglobin 10 gm/dL, urea 140 mg/dL, S. creatinine 1.9 mg/dL, bilirubin 4 mg/dL, albumin 2.6 g/dL, ALP 1200 IU/L, and INR of 1.84. On ultrasound, 4 out of 5 were solitary abscess in the right lobe with typhilitis present in 4 cases.

CONCLUSION

- Young alcoholic male from lower socioeconomic group with amoebic liver abscess presenting as solitary right lobe abscess was the most common pattern in our series. Liver abscess was uncommon in female patients. Apart from amoebic and pyogenic, tubercular liver abscesses were not so uncommon etiologically. Though average age of patients was in forties, increased incidence of mortality was noted in patients in the seventh decade. Cough as a symptom points to associated significant pleural effusion. Overall mortality was low probably due to use of minimally invasive drainage techniques and aetiology specific antimicrobials in all patients.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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