



LIVER ABSCESS, MANAGEMENT STRATEGIES AND OUTCOME

Surgery

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ABSTRACT

Background: Liver abscess, a disease troubling mankind from ancient times, has earliest documentation in the Sanskrit document. Where right upper abdominal pain, have potentially lethal consequences, if prompt diagnosis and treatment are not accomplished. However, two major types are known, Amoebic and Pyogenic, in medical literature. Pyogenic liver abscess constitutes major bulk of hepatic abscess in western countries. The diagnosis is confirmed by ultrasonography, reddish brown (anchovy-paste like material) aspirate from abscess. The diagnosis, treatment and prognosis, of liver abscess have evolved remarkably over past few years. Imaging has improved diagnostic competence and has altered therapeutic strategy. The study aims at early clinical and diagnosis on imaging of liver abscess, to set up some guide lines in view of conservative or either intervention.

Methods: The present study was hospital based longitudinal study, carried out in tertiary care teaching hospital from April 2016 to September 2019. A total of 65 patients were enrolled in the study. All patients with suspicion of having liver abscess were confirmed on Imaging and included as present study population. This study was mainly based on presentation, role of conservative treatment, aspiration, pigtail catheter, outcome and post procedural complications.

Results: All patients presented with pain right or left upper abdominal pain, any chest complaints, majority of present study group patients had fever with or without rigors, deranged liver function. Imaging is the most diagnostic method, and also helped in therapy and follow up.

Conclusions: Males are affected more than females, Imaging is the best modality for diagnosis, therapy and follow up. Aspiration or pigtail drainage is the standard method of drainage. Pigtail drainage is the better method of treatment than aspiration.

KEYWORDS

Aspiration, CT, Imaging, Liver Abscess, Pigtail drainage, USG

INTRODUCTION

Liver abscess is defined as a collection of purulent material in the liver parenchyma which can be due to bacterial, parasitic, fungal or mixed infection. It is the common condition around the globe; however, in Middle Europe and North America, it is a rare condition. The annual incidence of Pyogenic liver abscess has been estimated at 2.3 cases per 100,000 populations and is higher among men than women (3.3 vs 1.3 per 100,000)¹⁻³

A right hypochondriac, or epigastric or left upper quadrant abdominal pain, may have high mortality and morbidity because of some complications, if early diagnosis and management is done in a given patient.⁴ Two-thirds of all Liver Abscess in the developing countries are caused by the amoebiasis, a consequence of infection with *Entamoeba histolytica* and approximately three-fourths of them are pyogenic¹¹. The condition is endemic in tropical countries such as India due to poor sanitary condition and overcrowding. The chances of Liver Abscess account for 3 - 9% of all cases of amoebiasis¹². However, pyogenic and tubercular etiologies should always be entertained in the differentials. The incidence of tubercular Liver Abscess has recently increased due to increased incidence of predisposing factors such as alcoholism, irrational usage of antibiotics, emergence of drug-resistant bacilli, and immunodeficiency. The most common symptoms of a pyogenic Liver Abscess are saw-tooth pattern fever, nausea, vomiting, anorexia, upper right abdominal pain, hematological analysis of leukocytosis, anemia, and positive blood, or aspirate culture for bacterial etiology. Pain is a late symptom and is common with large solitary abscess. Pyogenic Liver Abscesses, result from ascending biliary tract infection, hematogenous spread via portal venous system, generalized septicemia with involvement of liver by way of hepatic arterial circulation, direct spread from intra-peritoneal infection and other causes. The diagnosis is confirmed by ultrasonography, reddish brown (anchovy paste like material) aspirate, negative gram stain, resolution with Metronidazole treatment. Imaging has improved diagnostic competence and has altered therapeutic strategy by allowing the possibility of percutaneous drainage. Rapid diagnosis, effective antimicrobial therapy, treatment of underlying disease, and orderly approach to therapeutic interventions directed towards the abscess remain the mainstay of care for the patient with hepatic abscesses¹³. The concept of minimally

invasive drainage, continues to be of paramount importance in treatment of hepatic abscess.^{15,16}

With these views in mind, a study has been carried out in 65 patients, to evaluate the current features of liver abscess in regard to the presentation, co morbid conditions and the different modalities of treatment. The study aims at early clinical and imaging wise diagnosis of liver abscess, in view of management with either conservative or intervention (aspiration, pigtail catheterization) to be done in a case of liver abscess in a given population.

METHODS:

The present study is hospital based longitudinal study, carried out in a tertiary care hospital, from April 2016 to September 2019. A total of 65 patients were enrolled in the study (N=65).

Inclusion Criteria

- Patients suspected of having liver abscess on the basis of history and clinical assessment which were then confirmed by USG and lab work up.
- Patients more than 18 years.

Exclusion Criteria

- Patients aging less than 18 years.
- Abscess associated with malignancy
- Immunocompromised patients
- Ascitis
- Liver abscess which ruptured in peritoneal, pericardial and pleural cavity.
- Who do not want to enroll in the study

Sample Design: 65 patients, admitted with clinical, laboratory and imaging feature of liver abscess.

Study Factors: Age, gender, clinical symptoms, clinical signs, USG feature, treatment modalities.

METHODOLOGY

A complete physical examination including examination of abdomen and chest following proper history. Specific investigations including

Hb%, TLC, DLC Liver function test, prothrombin time, blood for HBSAg, HIV, Fasting and post prandial blood sugar, ultrasound of abdomen, chest X Ray, microscopic examination and blood culture. The patients were divided into 2 treatment groups.

Group 1: with abscess cavity <5cm (150 cc)- they received only medical management and/or percutaneous aspiration.

Group 2: with abscess cavity >5cm (>150 cc) or smaller abscess which failed to respond to drug therapy alone, left lobe abscess, they in addition treated with USG guided-percutaneous needle aspiration or catheter drainage.

Medical Management

Amoebic Liver Abscess: all patients with diagnosis of amoebic liver abscess of size <5cm were treated with Metronidazole divided dose.

Pyogenic Liver Abscess: all patients with pyogenic liver abscess of size <5cm or if there were small multiple abscess which were either solidified and not amenable for tapping were treated initially with broad spectrum antibiotics till the culture and sensitivity report were available then treatment was guided as per sensitivity report.

Guided Aspiration

The patients with abscess size >5cm or smaller abscess those who failed to improve clinically, left lobe abscess were subjected to imaging guided aspiration. Informed consent was taken from the patients explaining the complications of the procedures for which open surgical intervention might be needed. The patients were examined daily for clinical improvement. Improvement in fever, and USG was done on 3, 7, 14 day, repeat TLC was done on day 3.

Chest X-ray was done after Catheter drainage to rule out pleural effusion or pneumothorax. The first review ultrasound was done when drainage over last 24 hrs had declined to <10ml. If the abscess had resolved, the catheter was removed. If the residual cavity was present, the catheter was flushed with saline and aspirate till no material was found. Further review ultrasound was done every third day and the catheter was removed if the catheter drainage had remained minimal, otherwise the catheter was left until drainage had stopped.

Outcome was assessed by: relief of symptoms, resolution of liver abscess cavity ultrasonographically on third day after treatment started.

RESULTS

Total of 65 patients with a diagnosis of liver abscess were included in the study. The demographic, clinical, laboratory data for all patients were collected and recorded. The outcome was studied. The observations are as follows:

The youngest patient was of the age 20 years and the oldest was of 68 years (Table 1).

Table 1: Age Distribution

Age Group	Frequency	Percentage
>20-30	6	9.23
>30-40	19	29.23
>40-50	15	23.07
>50-60	13	20
≥61	12	18.46
Total	65	100

Gender Distribution: There were 52 Males (80%) and 13 Females (20%) enrolled in the present study with 40 patients in Amoebic liver abscess and 25 in Pyogenic liver abscess. The overall Male to Female ratio is 4:1.

Table 2: Gender Distribution

	Male	Female	Total
Amoebic Liver Abscess	32	8	40
Pyogenic Liver Abscess	20	5	25
Total	52	13	65

Table 3: Clinical Symptoms

Variable	Amoebic Liver Abscess	Pyogenic Liver Abscess	Total	%
Pain	40	25	65	100

Fever	37	21	58	89.23
Vomiting	25	15	40	61.53
Chills and Rigors	18	11	29	44.61
Jaundice	12	8	20	30.76
Diarrhea	10	7	17	26.15
Cough	8	5	13	20

Table 4: Clinical Signs

Signs	Amoebic	Pyogenic	Total	%
Lump in abdomen	16	8	24	36.92
Hepatomegaly	33	16	49	75.38
Inter costal Tenderness	22	12	34	52.30
Respiratory Signs (decrease air entry)	14	6	20	30.76

Clinical Manifestations (Table 3): All 65 (100%) patients presented with pain in abdomen. Fever is the next common symptom, about 89% of population had fever at the time of presentation. Chills and rigors at the time of presentation -62% of the study population had chills and rigors in amoebic liver abscess and 38% had chills and rigors in pyogenic liver abscess. History of vomiting was found in 61.53% of the cases, in amoebic liver abscess 62.5% and in pyogenic liver abscess 37.5% had vomiting. About 30% of study population had jaundice. Cough was present in 20% of the study subjects.

USG is very important in therapeutic intervention for guided aspiration and pigtail insertion. It is also of great use in follow up of patients who had liver abscess. Out of 65 patients those with abscesses larger than 5 cm, USG guided drainage was done, 12 patients were treated conservatively on medical line of management, 12 patient underwent aspiration under USG guidance, 30 patients underwent pigtail catheterization and in 11 patients with multiple abscess combine pigtail catheterization as well as aspiration was done.(Table 5)

About 85% of the patient had symptomatic relief on 7th day in aspiration + pigtail group followed by pigtail group and 8% of aspiration and conservative were having no relief even on 7th day.(Table 6).Decrease in in volume of abscess cavity on USG is maximum in Pigtail aspiration followed by aspiration and then by conservative management.

Table 5 Various Modalities Of Treatment

Group A abscess <5cm (<150cc)		Group B abscess >5cm (>150cc)		Total
Medical Management	USG guided aspiration	USG guided pigtail catheter drainage	USG guided pigtail catheter drainage+ aspiration	
12	12	30	11	65

Table 6 Ultrasonography Of Abdomen Of Patients

	Amoebic Liver Abscess	Pyogenic Liver Abscess	Total
Single Abscess	28	13	41
Multiple Abscess	12	12	24
Total	40	25	65

DISCUSSION:

The present study includes 65 patients, and as many as 2 recent studies, shows that the common age group is between 30-50 years.^[7,8] The youngest patient was of age 20 years and the oldest was of 68 years. Reports in the literature shows that there is a male preponderance in a ratio ranging from 10:1 to 17:1^[8,9]. A retrospective analysis in 1978 by Kapoor et al reported that the male:female ratio was 5.66: 1, which had remained constant^[4]. In present study, the overall male : female ratio is 4:1. Study carried out in 2004, showed that 48% of pyogenic liver abscess, 67% of patients with amoebic liver abscess got fever^[10]. Majority of present study population was suffering from fever (89.23%) at the time of presentation and 44% of the study subjects got associated chill and rigor. Study from India Kapoor et al showed 75% patients presented with abdominal pain^[11]. Present study result simulates the result of this study 100% of the patient in amoebic and 100% of the patient in pyogenic had abdominal pain (right hypochondriac). A larger Indian study carried out in 2005 showed 31.94% patients got jaundice^[12]. In present study 30.76% had jaundice. The study carried out by Rajak CL showed that 67% patients had amoebic subtype^[13]. In present study 61.53% of patients were found to have amoebic liver abscess and 38.46% of patients were found to have

pyogenic liver abscess. So the present result corroborates with their result that amoebic liver abscesses is more prevalent than pyogenic liver abscesses.

CONCLUSION:

Present study includes 65 cases of liver abscess following are the conclusion of present study. The most common age group affected by liver abscess was third and fifth decade of life. Males are more commonly affected than females. Ultrasonography is the standard modality for diagnosis as well as therapeutic drainage of abscess and also follow up. The incidence of amoebic liver abscess was more as compared to pyogenic liver abscess. Image guided drainage is the best modality of treatment for liver abscess. In case of larger abscess (>5cm) or 150cc, ultrasound guided percutaneous pigtail catheter drainage is a superior therapeutic approach than percutaneous needle aspiration. If there are multiple abscess cavity the larger abscess cavity should be drained by pigtail catheter and the smaller ones should be drained by aspiration. Abscess cavity resolves better in case of catheter drainage than needle aspiration. Pigtail is better than aspiration group as compared to recurrence and readmission, but the hospital stay of pigtail is longer.

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