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Original Research Article

A study of different treatment modalities in management of liver abscess at tertiary care center

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ABSTRACT

Background: Of all the visceral abscesses, the liver accounts for 48%. When a purulent substance collects in the liver parenchyma as a result of bacterial, parasite, fungal, or combination infections, it is called liver abscess. It is prevalent in India, accounting for the second largest prevalence, owing to insufficient sanitation, overcrowding, and malnutrition. As the liver is a susceptible organ to producing abscesses, whereas amoebic liver abscess is the utmost frequent kind of abscess in the developing world's tropical regions, pyogenic abscess is more prevalent in affluent nations. The aims and objectives were to study the etiology, clinical manifestation, and predisposing factors of liver abscess; to compare the conservative and surgical treatment modalities of liver abscess; and to find out the outcome of these patients.
Methods: After matching inclusion and exclusion criteria, 100 clinically diagnosed liver abscess patients were enrolled for this retrospective and prospective observational study. Patients were analysed for ultrasonography whole abdomen, complete blood picture and liver function test and subjected to conservative or surgical management.
Results: The study group of 100 patients consisted of 83 (83%) male and 17 (17%) female with mean age of 40 years (18-70). 89 (89%) patients managed conservatively and 11 (11%) patients underwent for surgery. Patients with conservative management were found to have significant differences between outcome.
Conclusions: This study concludes that conservative management has significantly better outcomes as compared to surgical management.

Keywords: Liver abscesses,, Conservative management, Surgical management

INTRODUCTION

When a purulent substance collects in the liver parenchyma as a result of bacterial, parasite, fungal, or combination infection called liver abscess. A liver abscess occurs when bacteria or protozoa destroy hepatic tissue producing a cavity, which fills with infectious organisms, liquefied liver cells, and leukocytes. Of all the visceral abscesses, the liver accounts for 48%.[1] It is prevalent in India, accounting for 2nd largest prevalence owing to insufficient sanitation, overcrowding, and malnutrition.[2] Each year 40-50 million worldwide get amoebic abscesses. In endemic places, infection prevalence is more than 5%-10%.[3] Several studies conducted in rural regions of South America, Central America, Indo-Asia, and Africa have shown an occurrence incidence of up to 56%.[4,5] Liver abscess worldwide projected prevalence of 1.2-2.4 for every 100000 person-years and a prevalence of roughly 3.6 per 100000 in the United States, which has been increasing.[6] The differential diagnosis of liver abscess includes amoebic liver abscess, pyogenic liver abscess, fungal liver abscess, necrotic adenoma, and echinococcal cyst.

Generally classified as pyogenic liver abscess or amoebic liver abscess, the majority of abscesses that are amoebic,

occurring in developing nations.[7] Up to 40% of patients develop complications from pyogenic liver abscesses, with the most common being generalized sepsis. In addition to sepsis, morbidity can include pleural effusions, empyema, and pneumonia. Abscesses may also rupture intraperitoneally, which is frequently fatal. Usually, however, the abscess does not rupture but develops a controlled leak resulting in a perihepatic abscess.

Historically, liver abscess is a disease that has seen significant changes in demography, etiology, diagnosis, and treatment during the last century, the incidence looks to be increasing.[8] Though contemporary diagnostic techniques such as ultrasonography and computed tomography have lowered mortality to between 2% to 12%, there is still a substantial morbidity associated with liver abscess sequelae, particularly amoebic liver abscess.[9,10] The therapy of liver abscess has long presented a challenge for clinician who must determine whether to undertake therapeutic aspiration and when to abstain from it.

Numerous bacteria have been implicated in the pathogenesis of pyogenic liver abscess, however available data on the relationships between bacteriological species and clinical appearance, radiological features and prediction are few. The protozoan parasite *Entamoeba histolytica* is also a recognized nonbacterial root of liver abscess. Amoebic liver abscess (ALA) is uncommon in Europe and prediction are few. The protozoan parasite *E. histolyticum* is also a recognized nonbacterial root of liver abscess. ALA is uncommon in Europe and is mainly imported, although in endemic places, ALA may be further prevalent than PLA.[11]

It is a significant clinical concern in tropical parts of the world, particularly owing to amoebiasis liver abscess, and accounts for a large number of hospital admissions.[12-16] It is often a straightforward disease with favorable clinical results. However, there is a risk of morbidity and even death if appropriate and early treatment is not provided.[17-20] Antibiotics and supportive care are the standard treatments for liver abscess. Needle aspiration can be used as an adjunctive therapy and has been advocated for routine usage in the treatment of simple liver abscess in certain study. It has been hypothesized that needle aspiration can increase antibiotic response, shorten hospital stays and lower overall treatment costs. While ultrasound-guided needle aspiration is a very safe treatment, it is an intrusive technique that requires the passage of a large diameter needle into a highly vascular organ, which might result in bleeding. Aspirations with needles, particularly during intervention, have therefore remained a contentious subject and it is critical to ascertain their probable involvement in the treatment of liver abscess. Thus, this study aimed at improved awareness and early diagnosis of this disease entity and analyses the most important factors in achieving a decrease in the morbidity and mortality of liver abscess.

Aims and objectives

The aims and objectives were to study the etiology, clinical manifestation, and predisposing factors of liver abscess; to compare various treatment modalities of liver abscess; and to find out the outcome of these patients.

METHODS

We prospectively analyzed 100 patients from May 2018 to May 2022 in the Department of General Surgery, Heritage Institute of Medical Sciences, Varanasi, India.

Inclusion criteria

All patients with a diagnosis of liver abscess were included.

Exclusion criteria

Patients with abdominal or biliary surgery antecedents, abdominal neoplastic antecedents, cystic swelling of the liver, and patient lost in follow-up were excluded.

After getting clearance from the Ethical Committee and informed written consent in the native language of the patient, details of the patients who are diagnosed with liver abscess and managed with different treatment modalities like conservative, ultrasonographic needle aspiration and pigtail catheterization and exploratory laparotomy.

Statical analysis was done with SPSS 21 software and data analysis was done with Student t test and Mann Whitney test. P value less than 0.05 was significant.

RESULTS

Most common USG finding was solitary abscess cavity followed by multiple abscess cavity (Table 1).

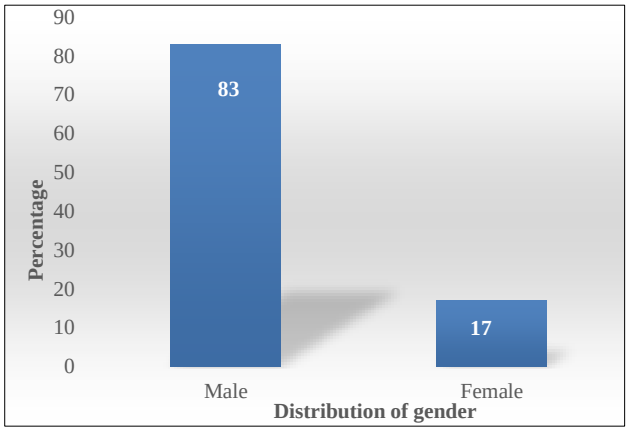

Figure 1: Gender distribution.

Table 1: USG findings of liver abscess patients.

USG findings	Frequency
Multiple abscess cavity	32
Solitary abscess cavity	57
Ruptured liver abscess	11
Total	100

Table 2: Type of liver abscess distribution.

Type of liver abscess	Frequency	Percentage
Amoebic	87	87.0
Amoebic, pyogenic	3	3.0
Pyogenic	8	8.0
Tubercular	2	2.0
Total	100	100.0

Table 3: Distribution of treatment delivered.

Treatment delivered	Frequency	Percentage
Conservative	25	25.0
USG aspiration	06	6.0
Pigtail catheterization	59	59.0
Exploratory laparotomy	11	11.0
Total	100	100.0

Table 4: Distribution of number of hospital stay.

No. of hospital days	Frequency	Percentage
0-3	5	5.0
4-7	26	26.0
8-11	34	34.0
12-20	35	35.0
Total	100	100

Table 5: Type of treatment.

Type of treatment	Frequency	Percentage
Conservative	88	88.0
Surgical	12	12.0
Total	100	100

Most common type of liver abscess was amoebic followed by pyogenic liver abscess (Table 2).

Table 3 shows the distribution of treatment delivered where maximum cases had underwent pigtail catheterization.

Table 4 shows the distribution of number of hospital days where most cases fall in the range between 12-20 days.

Most cases are managed conservatively as compared with surgical management.

Table 6: Association between no. of hospital days with treatment delivered.

Treatment delivered	No. of hospital days					
	0-3	**4-7**	**8-11**	**12-20**	**Frequency**	**Percentage**
Conservative	1	2	9	12	24	25.0
USG aspiration	0	4	0	2	06	6.0
Pigtail catheterization	4	20	25	10	59	59.0
Exploratory laparotomy	0	0	0	11	11	11.0
Total	5	26	34	35	100	100.0

Table 7: Association between no. of hospital days with USG finding.

USG findings	No. of hospital days					
	0-3	**4-7**	**8-11**	**12-20**	**Frequency**	**Percentage**
Solitary liver abscess	1	14	20	22	57	57.0
Multiple liver abscess	4	12	12	4	32	32.0
Ruptured liver abscess	0	0	2	9	11	11.0
Total	5	26	34	35	100	100.0

Table 6 shows the association between number of hospital days with treatment was found significant in this study (p value is less than 0.05 level).

Table 7 shows the association between the number of hospital days with USG findings were statistically significant found in this study (p value is less than 0.05 level).

DISCUSSION

By using the purposive technique sample size of 100 cases were drawn, where, in term of gender distribution highest percentage of cases had been observed in the male category. Similar studies were done by Abbas et al and Wuerz et al also showed a high prevalence of male cases.[19]

In terms of the distribution of signs where the highest cases had been observed in the RUQ tenderness and hepatomegaly followed by pleural effusion category which was 57 and 42, whereas a study by Ghosh et al showed pleural effusion as 30% which was more or less similar to this study findings.[20]

For the case of the distribution of symptoms where the percentage of cases been observed to have a fever and abdominal pain, same as of Ghosh et al a study in this line showed a high prevalence of abdominal pain as a sign. Cheema et al, Zafar et al, and Huang et al informed instances with symptoms including fever, stomach discomfort, and vomiting in larger prevalence which was not in conformity with this present study.[20-22]

For the cases related to risk factors where most cases had hypertension and diabetes mellitus risk factor observed in this present study. Similar findings had been reported in the research of Dutta et al.[23]

When USG findings were taken into consideration where most of the cases fall under solitary abscess cavity, Choudhary et al a study in this dimension showed the highest percentage of cases from solitary abscess cavity 78% which was in conformity with this percentage study. Whereas Hathila et al the study showed USG findings as 6% of cases from solitary abscess cavity, which was not in, the present study dimension.[24-26]

For the cases of a type of abscess where the highest percentage of cases fall under the amoebic category in the present study findings. Shaikh et al, Hayat et al, and Ahsan et al also showed similar study results when the comparison were made.[27,28]

In terms of pus culture, report the present study findings showed that the highest percentage fall under the sterile category. Singh et al study in this dimension showed that it was positive 4 out of 100, that was 4%, it was negative in 4 in out of 100, that was 3%, and the rest 93% were sterile.[29]

Study by Patterson et al in this regard showed that the usage of serological testing for the diagnosis of amoebic liver abscess can occasionally lead to either false negative results early in the course of the disease, due to delay in rise of antibody titre, or to false positives due to background subclinical amoebic infections. Consideration of high titres for diagnosis may help exclude these false positive in this context.[16]

For the cases related to treatment distribution, pigtail catheter drainage has the greatest treatment proportion. In this regard, Solomkin et al indicated that antibiotic therapy and adequate drainage were the primary stays of treatment for liver abscess. Intravenous antibiotics was recommended as first-line therapy for complex intraabdominal infections by the American Society of Infectious Diseases.[30]

According to Rajak et al, and Lee et al the size of the liver abscess was typically used to determine whether image-guided needle aspiration, percutaneous catheter drainage, or surgical should be performed, and these studies confirmed that catheter drainage was more effective than aspiration therapy in cases of liver abscesses.[31-33]

The present study results showed all the cases to have reduction in volume on USG, Musa et al study on this dimension showed recurrence of abscess in conservative management was in 6 (20.0%) and need for surgical intervention was in 4 (13.3%) patients while in USG guided aspiration group only 1 (3.3%) patient showed recurrence.[34]

The distribution of no of hospital days where most of the cases fall in the range between 12-20 days category for the present study, Bansal et al study in this dimension showed the hospital stay duration on average was 9.6 days which was more or less similar to this present study findings. Sharma et al study in same dimension showed the mean hospital stay of patients was 13.4 days which was not in conformity of the present study.[35,36]

In terms of number of aspirations where highest percentage of cases fall under the nil category for this present study. Singh et al showed with his study, a 15% frequency of secondary contamination with bacteria after needle aspirations done repeatedly, however, Baek et al, Giorgio et al did not show this problem.[37-39]

With context to number of pigtail days, the present study found that maximum percentage of cases fall under nil category followed by 4 to 7 days category. Similar results been observed from the study conducted by Bansal et al but Goel et al study showed mean duration of pigtail drainage as days.[40]

CONCLUSION

Liver abscess is a frequently encountered surgical issue in contemporary clinical practice. It causes significant discomfort to patients and prolongs morbidity in those who are not handled correctly or who develop problems. It creates a significant conundrum since management protocols are not properly established. There are an expanding variety of available novel therapeutic techniques. However, their effectiveness and clinical indications remain unknown. Additionally, there is a dearth of evidence on the disease's prognostic variables and epidemiology. This study seeks to shed light on a few of such variables.

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