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Original Research Article

Liver abscess: presentation and an assesment of the outcome with various treatment modalities

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ABSTRACT

Background: Liver abscess is a disease of frequent occurrence which is important in the differential diagnosis of upper abdominal and right lower respiratory tract diseases. Liver abscess are space occupying lesion in liver which has a higher incidence of mortality and morbidity. The aim is to study the clinical presentation and compare the outcomes of various treatment modalities.
Methods: A Retrospective Study was conducted over a period of 3 years from November 2016 to October 2019, in tertiary care centre, R. L. Jalappa hospital, Tamaka, Kolar, Karnataka, India. 46 cases of liver abscesses were studied. Complete clinical details about the clinical presentation of the cases, investigative work up and treatment modalities adopted were collected. The associated morbidity and mortality of all patients were reviewed.
Results: In our study, the mean age was 49.5 years which included male patients most commonly. Pyogenic liver abscess was more common than amoebic liver abscess. Right lobe of the liver was most commonly involved. The common treatment modality was continuous drainage of the abscess cavity by the percutaneous insertion of a pig tail catheter. Surgical intervention for the rupture was done in one patient.
Conclusions: In our experience of managing liver abscess, pyogenic liver abscess involving right lobe of the liver was common with the presentation of upper abdominal pain, high grade fever with chills and tender hepatomegaly. Ultrasound abdomen is very useful investigative tool in diagnosis and also in intervention and in the follow up of the condition and to evaluate progression or resolution.

Keywords: Amoebic abscess, Continuous drainage catheter, Liver abscess, Percutaneous aspiration, Pyogenic abscess

INTRODUCTION

A liver abscess is a suppurative lesion in the liver as a result of invasion and multiplication of microorganisms which gain access by entering directly from an injury through the blood vessels or by the biliary ductal system.

The major cause is due to pyogenic liver abscesses which accounts for 80% of all liver abscesses in the developed world, amoebic abscess and polymicrobial.[1] These may also be due to fungal infection. Liver abscess are a rare but potentially life-threatening condition which requires early diagnosis and prompt treatment.

The etiology of this condition has altered over the years. Traditionally appendicitis was considered as the major cause of liver abscess, but due to early diagnosis and prompt treatment the incidence has been reduced.[2] In comparison, cholelithiasis and biliary tract diseases having a potential to cause ascending portal tract sepsis, have replaced appendicitis as leading cause of hepatic abscess formation.[3] By reviewing the literature, a huge

change in the management of liver abscess and further decrease in the morbidity and mortality to 5-30% has been noted.[3] In combination with targeted antiamoebic therapy, percutaneous aspiration remains as the main stay of treatment. However a small number of patients do not respond to minimally invasive procedures and may require the traditional surgical drainage as a definitive treatment.

Here we reviewed our experience in the management of liver abscesses in the past 3 years to explain the management and further course of the disease.

METHODS

Complete Demographic, clinical details and investigations of all patients admitted to department of general surgery at R L Jalappa Hospital, Kolar, Karnataka, India, over a period of 3 years (2016 to 2019) were studied retrospectively.

Inclusion criteria

- All patients aged 18 years and above of either sex
- With pyogenic, amoebic and post traumatic liver abscess.

Exclusion criteria

- Patients with age less than 18 years
- Abscess in close proximity to large vascular structures in liver
- Malignancy of hepatobiliary system
- Not giving consent

After reviewing the records for clinical presentation, duration, risk factors, general physical, systemic examination findings, blood, microbiological and radiological investigations were collected. Modalities of treatment were noted.

Based on the hospital antibiotic policy patients were empirically started on intravenous ciprofloxacin 500mg, 12hrly and metronidazole intravenous 500mg, 8hrly and changed subsequently according to the pus culture and sensitivity reports. Patients with solitary abscess of less than 100cc or the multiple abscess involving many segments were managed by empirical antibiotics or antiamoebics based on the radiological findings.

Solitary cysts of volume 100cc-200cc, ultra sound guided percutaneous aspiration was performed and regularly followed up with imaging studies for progression or regression in the collection. During this period, if the patient's general condition deteriorated they were managed by catheter drainage. Those patients presenting beyond 200cc were managed by catheter drainage using pigtail (Figure 1-3) under ultrasound guidance and under local anaesthesia.

Figure 1: Painting and draping of abdomen.

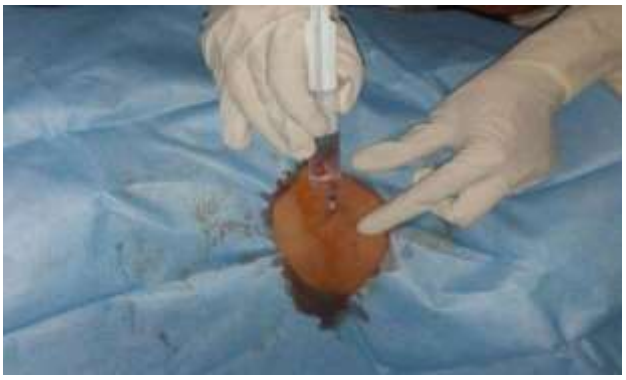

Figure 2: Infiltration of local anesthetic.

Figure 3: Pig tail catheter insertion.

Figure 4: Drainage of purulent collection.

The catheter was left in situ for 7-10 days or until the drain output was less than 30cc. Pus was sent for culture and sensitivity analysis after both aspiration and catheterization.

Data was entered into Microsoft excel data sheet and was analyzed using SPSS 22 version software. Categorical data was represented in the form of Frequencies and proportions. Chi-square test was used as test of significance for qualitative data. Continuous data was represented as mean and standard deviation. Independent t test was used as test of significance to identify the mean difference between two quantitative variables. p value (Probability that the result is true) of <0.05 was considered as statistically significant after assuming all the rules of statistical tests.

RESULTS

After reviewing the records of 46 patients with liver abscess a descriptive analysis was done. In the study 24.4% were in the age group <40 years, 31.1% were in the age group 41 to 50 years, 26.7% were in the age group 51 to 60 years and 17.8% were in the age group >60 years. Among males, majority was in the age group 41 to 50 years (71.4%) and among females majority were in the age group 51 to 60 years (31.6%). There was significant difference in age distribution between males and females.

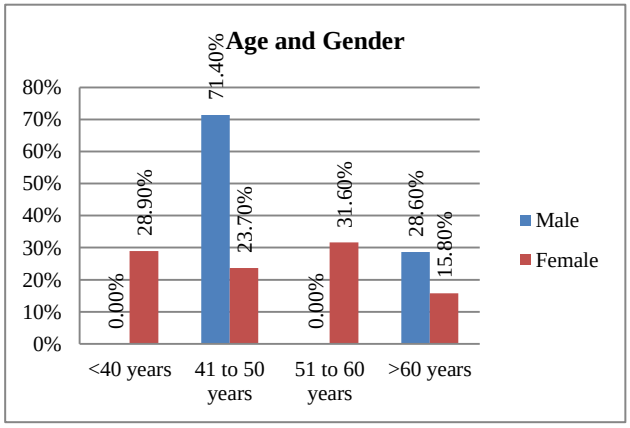

Figure 5: Age and gender distribution and its association.

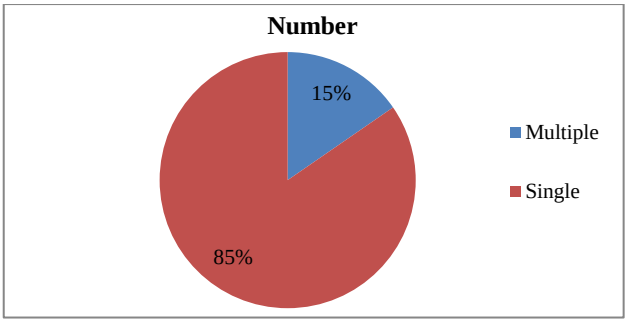

Figure 6: Type of abscess.

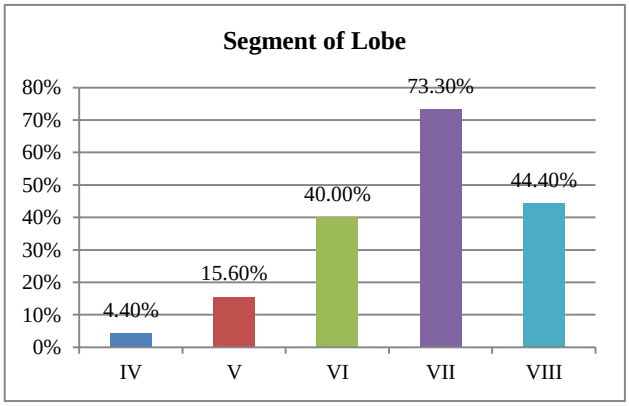

Figure 7: Distribution of most common segment of liver involved.

Most common segment of liver involved in the study was Segment VII (73.3%), 44.4% had Segment involvement, 40% had segment VI involvement, 15.6% had segment V involvement and 4.4% had segment IV involvement.

Organism isolated in 33.3% of subjects was *E. coli*, in 31.1% of subjects *Entamoeba histolytica*, in 11.1% *Klebsiella pneumonia*, in 8.9% polymicrobial and in 15.6%. No organism was isolated.

In the study 2.2% had Consolidation of Right Lung Base with subpulmonic effusion, 4.4% had pneumonia, 31.1% had right pleural effusion, 2.2% had rupture into peritoneal cavity and 6.7% had rupture into pleural cavity.

Table 1: Association between gender and organism isolated.

		Gender					
		Female		Male		Total	
		Count	%	Count	%	Count	%
Organisms	*E. Coli*	0	0.0	15	39.5	15	33.3
	Entamoeba histolytica	2	28.6	12	31.6	14	31.1
	Klebsiella pneumonia	2	28.6	3	7.9	5	11.1
	Polymicrobial	2	28.6	2	5.3	4	8.9
	No organism	1	14.3	6	15.8	7	15.6

$\chi 2 = 8.676$, df =4, p =0.07.

Table 2: Association between gender and complication.

		Gender					
		Female		Male		Total	
		Count	%	Count	%	Count	%
Complication	Consolidation of right lung base with subpulmonic effusion	0	0.0	1	2.6	1	2.2
	Pneumonia	0	0.0	2	5.3	2	4.4
	Right pleural effusion	4	57.1	10	26.3	14	31.1
	Rupture into peritoneal cavity	0	0.0	1	2.6	1	2.2
	Rupture into pleural cavity	0	0.0	3	7.9	3	6.7
	None	3	42.9	21	55.3	24	53.3

$\chi 2 = 3.266$, df =5, p =0.659.

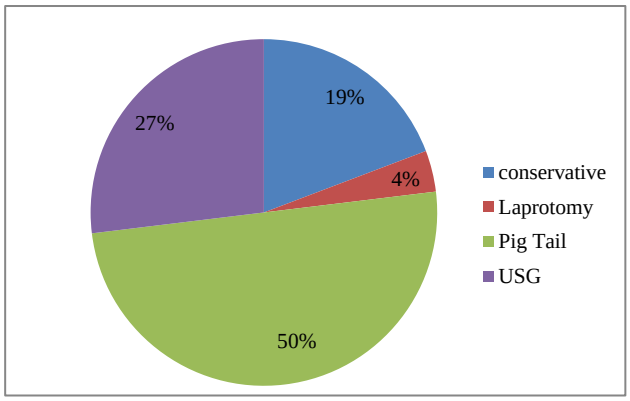

Figure 8: Treatment method.

Patients were managed as mentioned previously. One patient presented with features of peritonitis (2.2%) due to ruptured liver abscess for which open surgical drainage was done. Two patients (6.7%) presented with rupture into the pleural cavity on the right side which were managed with intercostal drainage tube and antibiotics. Majority of the patients presented with right pleural effusion accounting to 31% which was found to be reactionary, which subsided on treating liver abscess. Four cases reported with recurrence (20%) who were treated initially with percutaneous aspiration and three of these patients were diabetics. These were treated by glycaemic control and percutaneous continuous catheter drainage. Two patients had associated consolidation of right lower lobe which were managed with antibiotics..

DISCUSSION

In our study of 46 cases of liver abscess, the mean age group of the patient is 49.5 with the min age of 18 years to maximum of 80 years. The male to female ration in our study is 5.5:1 which is similar to the study conducted by Kapoor et al which was 5.66:1.[5]

In the present study, Pyogenic liver abscess seen most commonly followed by Amoebic Liver Abscess, with more common in right lobe of the liver 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.[6]

Majority of population in present study was suffering from fever (88%) at the time of presentation and 52% of them were associated with chills and rigor. Similar Study carried out at Karachi by Mohsen et al, showed that 48% of pyogenic hepatic abscesses, 67% of patients with amoebic liver abscess presented with fever.[7] Study by D' Angelica et al they found *E. coli* followed by *Klebsiella* as most frequent organism[8] Similarly in our study, majority of the cases were monomicrobial with *E. coli* accounting to 33.3% and 11% includes *Klebsiella* and the 8.9% polymicrobial infection.

In Our study all cases of pyogenic liver abscess were treated with percutaneous catheter drainage procedure and amoebic liver abscess were managed with anti-amoebic drugs. In a study conducted by Naveed et al, majority of patients had amoebic liver abscess whereas *E. Coli* and *Klebsiella* were the most common organisms cultured from the pyogenic abscess and majority of amoebic liver abscess patients were treated with drug therapy alone whereas all pyogenic liver abscess required some form of drainage.[9]

In our study majority of the cases presented with pleuro pulmonary complications which includes pleural effusion in majority of the cases (31%) which resolved with medical therapy.

Two patients (6.7%) presented with rupture into the pleural cavity on the right side which were managed with intercostal drainage tube and antibiotics. Manifestations of liver abscess include sterile effusions, contiguous spread from the liver and rupture into the pleural space. Sterile effusions and contiguous spread usually resolve with medical therapy.[10] Mukhyopadhya et al report pleuropulmonary involvement in 24% and 26.39% of peritonitis cases in their study.[6] In Our study, one patient presented with features of peritonitis due to ruptured liver abscess for which open surgical drainage was done.

The limitations in Our study was, a small number of subjects included in the study, as this was a retrospective

analysis we diagnosed amoebic liver abscess based on negative culture report of 48hrs of aerobic culture, anchovy sauce appearance of pus, clinical and radiological improvement with anti-amoebic drugs.

With the results in our study it can be safely said that the treatment of liver abscess can be tailored according to the volume of the abscess cavity and response of the patient to antiamoebics. Small abscesses can be treated with antibiotics alone based on the local antibiotic policy, medium abscesses can be treated with aspiration and follow up for progression or resolution while percutaneous pigtail catheter drainage is a safe and effective mode of treatment for large liver abscesses.

CONCLUSION

In our experience of managing liver abscess, pyogenic liver abscess involving right lobe of the liver was common with the presentation of upper abdominal pain, high grade fever with chills and tender hepatomegaly.

Ultrasound abdomen is very useful investigative tool in diagnosis and also in intervention and in the follow up of the condition and to evaluate progression or resolution.

Thus it can be safely said that the treatment of liver abscess can be tailored according to the volume of the abscess cavity and response of the patient to antibiotics and antiamoebics. Small abscesses can be treated with antibiotics alone based on the local antibiotic policy, medium abscesses can be treated with aspiration and follow up for progression or resolution while percutaneous pigtail catheter drainage is a safe and effective mode of treatment for large liver abscesses.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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