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Research Article

Liver Abscess: An Assessment of the Outcome with Various Treatment Modalities

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ABSTRACT

Aim: To evaluate the clinical presentation and to compare the various treatment modalities for the treatment of liver abscesses.

Materials and methods: Over a period of 3 years, 24 cases of liver abscesses were studied retrospectively. Complete clinical details including clinical presentation, etiology, investigative work up and treatment with morbidity and mortality of all patients were reviewed.

Results: Among the 24 cases, 18 were male and 6 were female, age of the patients ranged from 23-70, mean age of 58 years. 15 patients underwent pigtail catheterisation using Seldinger technique, 5 patients underwent USG guided aspiration and 4 patients received empirical therapy alone. No major complications were encountered. A patient on empirical therapy was converted to laparoscopic abscess drainage while another patient treated by USG guided aspiration had to undergo pig tail catheterisation for recurrence.

Conclusion: In our experience, those cases presenting with abscess and collection of less than 100 cc can be managed with antibiotics and antiamoebics alone, collection more than 100 cc can be managed most of the times with ultrasound guided aspiration but requires follow up with imaging to rule out recollection while for collections more than 200 cc a pig tail catheterization is warranted.

Keywords: Hypereosinophilic syndrome; Empty sella syndrome; *S. stercoralis*

INTRODUCTION

Pyogenic liver abscesses accounts for 80% of all liver abscesses in the developed world and is always polymicrobial [1,2]. Southeast Asia and Africa show a prevalence of amoebic and fungal liver abscesses which are relatively less common in other parts of the world [3]. Though relatively rare, with a reported incidence of 0.5%-0.8% in western world and a incidence of 20 per 100000 among the hospitalized patients, pyogenic liver abscess is potentially lethal [4]. Hence there is need to diagnose and treat this condition early.

The etiology of this condition has altered over the years. Traditionally appendicitis was considered as the major cause of liver abscess [5], but with advent of surgery and better antibiotic coverage overtime its incidence as a source of abscess has reduced. In comparison, cholelithiasis and biliary tract diseases having a potential to cause ascending portal tract sepsis [6], have replaced appendicitis as leading cause of hepatic abscess formation. Liver abscess was regarded as a high morbidity disease requiring surgical drainage with mortality rates between 9% to 80% [7], if untreated; it would result in death [1].

In the last few years we have witnessed a huge change in the management of liver abscess and further decrease in the morbidity and mortality to 5%-30% [8]. Advances in interventional radiology has aided in treating these conditions by minimally invasive procedures. In combination with targeted empirical 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.

We reviewed our experience in the management of liver abscesses in the past 3 years to explain the etiology, management and further course of the disease & reviewed the literature in this field & present a summary on the current practice which may serve as a tool in treating this condition.

METHODS

The demographic and clinical details of all patients admitted to our institution for liver abscess confirmed by ultrasonography over

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a period of 3 years (2013 to 2016) were studied retrospectively. Data regarding clinical findings, etiology, investigations, treatment was gathered. Patients with chronic alcoholic history and cirrhosis of liver and patients with history of hepatitis were excluded from the study.

Patients with abscess less than 100 cc were managed by empirical therapy alone for 3 weeks. Beyond 100 cc, ultra sound guided percutaneous aspiration was done. But if the patient's general condition deteriorated they were managed by pigtail catheterization. And beyond 200 cc pig tail catheterisation was done by Seldinger's technique (Figures 1-3) under local anaesthesia.

Figure 1: Painting of abdomen.

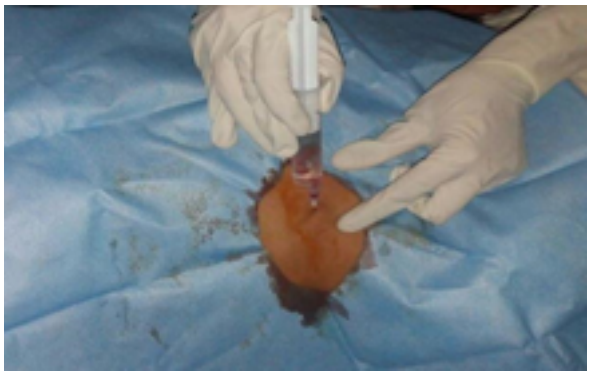

Figure 2: Draping of the site and local anaesthic injection.

Figure 3: Pig tail catheter insertion.

The catheter was left in situ for 7-10 days or until the drain output was less than 30 cc. Pus was sent for culture and sensitivity analysis after both aspiration and catheterization. Patients were empirically given a combination of cephalosporin and metronidazole (empirical therapy) which was later changed based on response of patient or culture sensitivity if intervention was done. (Figure 4) Laparoscopy

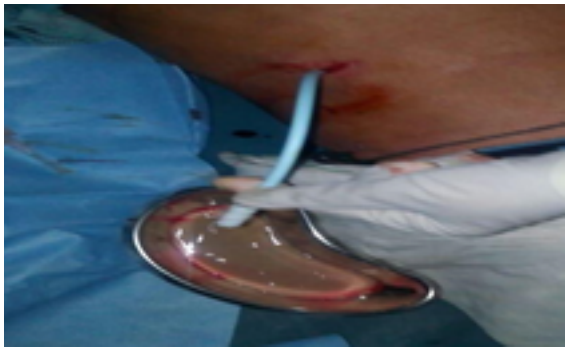

Figure 4: Drainage of purulent collection.

guided aspiration was done if all the above measures failed.

RESULTS

Of the 24 patients studied, most of them were in the age group 46 to 55 years [8] were as only one patient was below 25 years (Figure 5).

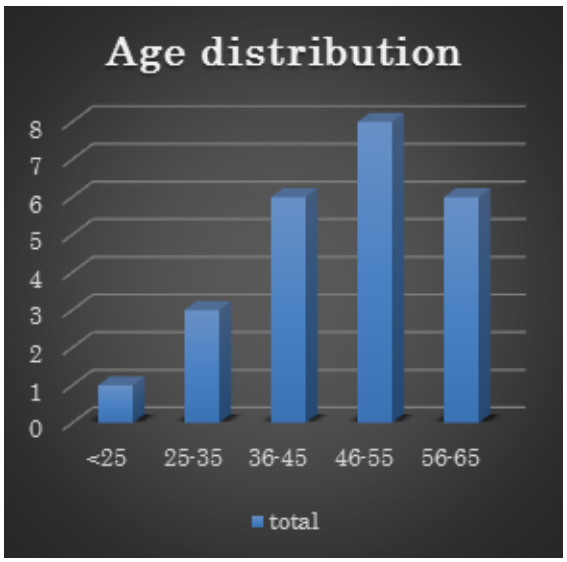

Figure 5: Bar diagram showing age distribution of patients in our study

Majority of the patients i.e. 16 were male and only 8 were female (Figure 6).

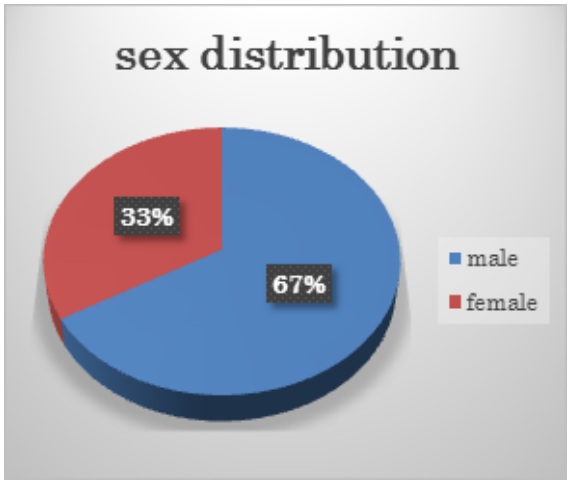

Figure 6: Pie diagram showing sex distribution of patients in our study.

Figure 7 shows the abscess was predominantly seen in the 7th segment of liver (44%).

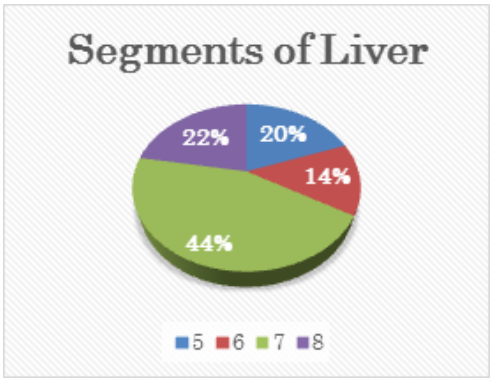

Figure 7: Pie diagram showing segmental distribution of liver abscesses.

The distribution of patients according to the volume of abscess cavity is as follows (Figure 8).

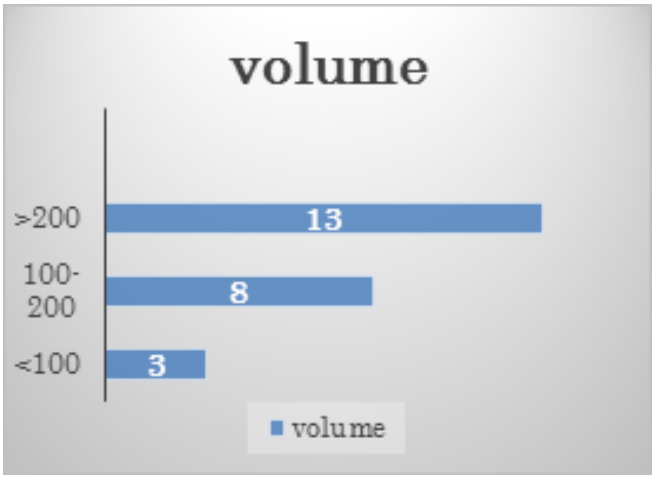

Figure 8: Pie diagram showing patient distribution according to volume of abscess cavity.

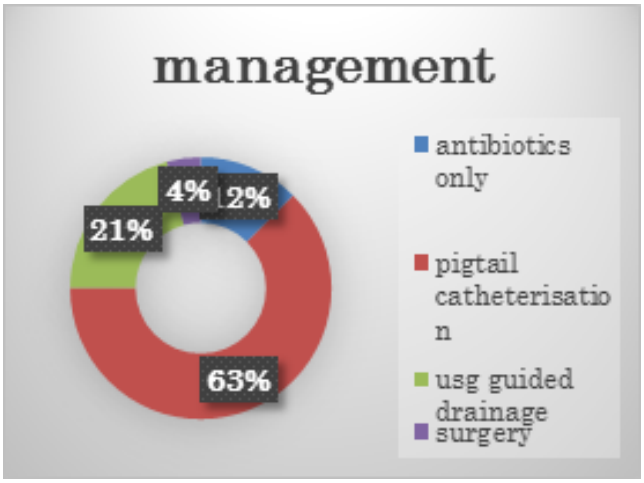

Figure 9: Pie diagram showing patient distribution according to management received.

Table 1: Showing the organisms isolated in patients.

Sl. No.	Organism	No. of patients
1.	*Escherichia coli*	10
2.	*Entamoeba histolytica*	8
3.	*Klebsiella pneumonia*	4
4.	Polymicrobial	1
5.	No growth	1

There were no mortalities in this study. The mean length of hospital stay was 21 days and much longer in the case of surgical evacuation. The data of follow up for a period of 6 months showed repeat liver function tests and imaging confirmed the resolution of the abscess cavity in all cases [9].

DISCUSSION

Hepatic abscess was described back from the time of Hippocrates around 4000 B.C. Ochsner's review of 47 cases of pyogenic liver abscess indicated open surgical management as the main stay of therapy [10]. This series emphasized a uniformly fatal outcome of the untreated pyogenic liver abscess. Even after the aggressive management of the liver abscess, mortality remained as high as 60%-80% in the mid twentieth century (Figure 9). Advancements in radiological and microbiology techniques have improved the diagnosing as well as revolutionized the management of the liver abscess which to a reduction in mortality rate to <5%-30% [8].

With early diagnosis and management, the peak incidence is shifting from the young towards sixth and seventh decade of life. Hepatic abscess are relatively rare in children and adolescents and are usually associated with trauma or any underlying immunodeficiency status. Clinical presentation of pyogenic liver abscess can be non-specific and similar to other infectious conditions or hepatobiliary inflammations. These include fever with chills and rigors, nausea and vomiting, right upper quadrant pain, anorexia, weight loss, weakness and malaise, cough hiccups and referred pain to the right shoulder due to irritation of the diaphragm. Patients with small solitary lesions have an insidious course with anorexia, weight loss, and fatigue anemia of chronic disease while multiple abscess have an acute presentation.

The laboratory parameters associated with hepatic abscess like the inflammatory markers are sensitive but not specific. In our study patients presented with leucocytosis and normocytic and normochromic anemia. Ultrasonography and computed tomography are the gold standard modalities in the diagnosis of liver abscess [11] and have a therapeutic value for guided percutaneous aspiration and drainage of the abscess cavity. These radiological interventions may also reveal the etiology sometimes, for example hepatobiliary pathologies.

There has not been any change in the incidence of the pyogenic liver abscess but there has been a definite change in the etiology of the condition due to advent in surgical and microbiological practices. Biliary tract diseases are the major cause of bacterial liver abscess followed by appendicitis. Choledocholitiasis, obstructing tumors, strictures, and congenital anomalies of the biliary tract are the major causative conditions. An alternative mechanism is by direct spread of contiguous infection i.e., embolization of a septic focus from the intra-abdominal infection. Diverticulitis, inflammatory bowel disease, perforated hollow viscus and appendicitis are probable source of the emboli. Systemic bacteremia due to endocarditis, pyelonephritis may result in abscess formation due to hematogenous spread. Such cases have been reported in immunocompromised and leukemic patients (Table 1).

The microbial organisms isolated from the pus show a wide spectrum of infection from polymicrobial to parasitic infestations particularly in tropical and subtropical areas. *Entamoeba histolytica* and *Ascaris lumbricoides* are two such parasites associated with liver abscess. These should be considered particularly in the endemic areas. Liver abscess if left untreated can end up in sepsis and later peritonitis secondary to rupture. If the abscess contains less than 100 cc of pus 3 weeks of systemic broad spectrum antibiotics are

the main stay of treatment. Yet there are some studies which suggest that antibiotics alone are not the best mode of treatment especially when the size of the abscess is increasing in which case surgical or radiology guided drainage of the abscess is the best modality of treatment.

Various reports suggest that an abscesses above 7 cm need to be drained routinely. In addition other criteria for percutaneous drainage are continued pyrexia for 48-72 hours post initiation of medical treatment, and clinical and ultrasonographic features suggestive of impending perforation [12]. Surgical drainage has a high therapeutic success rate and was the gold standard until the mid-1970s.

With the advancement of the sonographic imaging, the percutaneous drainage has emerged as an effective alternative to the surgical drainage with similar high success rate. The decision to leave the catheter in place after aspiration rather than repeated aspiration is also combative. Multiple aspirations appear to be simple, effective and easy to perform with less post procedural complications and sepsis. However this requires careful follow up with repeated imaging to assess the response to the therapy and patient compliance tends to be less. Insertion of a drainage catheter is found to be more effective if the size of the abscess is more than 5 cm. The average time to achieve 50% reduction in the size is found to be significantly low with percutaneous drainage than with the needle aspiration.

Despite the high success rate of percutaneous drainage techniques, there is a major role of surgical aspiration in the management of pyogenic abscess.

These conditions include:

- No clinical response for 4-7 days in spite of drainage via a catheter placed in the abscess cavity.
- Multiple, large or loculated abscesses.
- Thick walled abscess with viscous pus
- Concurrent intra-abdominal surgical pathology.

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 empirical therapy (Figure 8). Small abscesses can be treated with empirical therapy alone based on the local antibiotic and antiamoebic policy, medium abscesses can be treated with aspiration and follow up while catheterisation is preferable in large abscesses.

CONCLUSION

In our experience of managing liver abscess at a tertiary care rural hospital we conclude that it occurs secondary to intestinal amoebiasis. All the cases except 1 responded to empirical treatment. Those cases presenting with abscess less than 100 cc of collection can be managed with empirical therapy of an antibiotic and antiamoebic alone. Those above 100 cc if managed with Ultrasound guided aspiration only have to be followed up with imaging to rule out recurrence. Cases with more than 200 mL of pus in the liver are best treated with pig tail catheter drainage. All the cases require a course of empirical therapy for a period of 3 to 4 weeks and a follow-up for 6 months to look for complete resolution.

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