

Liver Abscess – A scourge of the Tropics

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ABSTRACT

Introduction: Liver abscess defined as a collection of pus within the liver parenchyma continues to remain a scourge for the population in our limited resource area. Amoebic and pyogenic etiologies predominate. Despite radiological advancements, minimally invasive therapeutic measures and availability of effective antibiotics, morbidity and mortality continue to remain high in cases of liver abscess.

Aim: The present study was carried out to document the various modalities of diagnosis and treatment of liver abscess in our set up and to study what changes may have occurred overtime in these parameters.

Materials and Methods: This prospective study was carried out in the Departments of Surgery and Medicine, Rohilkhand Medical College and Hospital, Bareilly between 15th September 2014 to 15th September 2015. Thirty five newly diagnosed patients of liver abscess confirmed by imaging and aspiration were included in this study. Demographic data, clinical presentation, radiological findings, management, hospital stay and follow-up of all patients was entered in a predesigned proforma for this purpose and a proportional analysis of the data was done using SPSS software version 15.

Results: Liver abscess was commoner in males 32(91.4%) as compared to 3(8.6%) female patients. Amoebic liver abscess was the cause in 20(57.15%) patients the rest 15(42.85%) were those of pyogenic liver abscess. Haematogenous spread from a septic focus was the commonest source for 8(53.33%) of pyogenic abscesses. 21(60%) of all the abscesses affected the right lobe of liver. Pain in the right hypochondrium/epigastrium was the commonest symptom in 28(80%) patients. Ultrasound of the abdomen with a sensitivity of 91.42% and CECT abdomen with a sensitivity 100% were the diagnostic modalities of choice. All patients of amoebic liver abscess received metronidazole and the commonest additional measure was needle aspiration in 10(50%) of patients. Appropriate antibiotic with needle aspiration was also the commonest procedure in 8 (53.33%) of patients with pyogenic liver abscess.

Conclusion: Amoebic and pyogenic liver abscesses continue to plague the poor population in our region. Antibiotics and ultrasound guided percutaneous needle aspiration which provides immediate pain relief are effective treatment for both. Clinical progress of the patient rather than blind reliance to ultrasound findings of an abscess cavity which may take up to three months to resolve should guide therapy.

Keywords: Abscess, Diagnosis, Hepatic, Management

INTRODUCTION

Hippocrates has been credited to have first given the description of a liver abscess in the year 4000 BC, whereas Oschner first described pyogenic liver abscess in 1938 [1]. Amoebic liver abscess diagnosed usually by the presence of a painful epigastric mass, fever with chills and rigors, confirmed by abdominal ultrasonography and the presence of anchovy sauce like pus on needle aspiration continues to predominate

in third world countries like ours. Pyogenic abscess following biliary tract disease, hematogenous spread, trauma or due to secondary infection in an amoebic liver abscess is by no means uncommon. Ultrasonography, CT scans have paved the way to early diagnosis as well as lending themselves well in minimally invasive procedures like needle aspiration and placement of drainage catheters. They have dramatically improved outcomes in these very sick patients.

MATERIALS AND METHODS

This was a prospective study carried out on all newly diagnosed 35 patients of liver abscess admitted in the indoor wards of surgery and medicine of Rohilkhand Medical College, Bareilly between 15th September 2014 to 15th September 2015. All these patients were investigated for a complete blood count, liver function tests, serum creatinine, random blood sugar. Liver abscess was confirmed on ultrasonography/ ultrasonographic guided needle aspiration whereas CECT was reserved for equivocal cases.

All patients were counselled on their disease and due consent taken for any procedure performed. The management strategy was as follows:

Amoebic liver abscess – Diagnosed usually as a solitary abscess on ultrasonography or aspiration of anchovy sauce like pus was treated with intravenous metronidazole 500mg six hourly initially for three to five days. Continuation therapy consisted of oral metronidazole 800mg three times a day for a total of ten days. For those who did not respond to therapy in three days chloroquine was added in doses of 500mg twice a day for two days followed by 250mg twice a day for two to three weeks. It was used as a single agent in those allergic to metronidazole. This therapy was followed by Diloxanide furoate 500mg per orally three times a day for ten days to eliminate luminal infection. Pediatric patients received age appropriate doses.

Needle aspiration was done in the following patients:

- (1) Those in whom the size of the abscess cavity was greater than five centimeters on initial ultrasonography,
- (2) Those in the left lobe of the liver,
- (3) Failure of therapy in three days and especially if difficult to differentiate from pyogenic abscess,
- (4) Age older than 55 years.

Pigtail catheter drainage was reserved for those where the pus was deemed too thick for aspiration. Surgical drainage (laparotomy) was carried out only in one patient for the complication of abscess perforation leading to perforation peritonitis.

Pyogenic liver abscess – Diagnosed as multiple small abscesses in the liver on ultrasonography [Table/Fig-1] or aspiration of pus was treated with Piperacillin-Tazobactam 4.5 gm intravenous infusion eight hourly as a single agent till culture and sensitivity report was available. Pigtail catheter drainage was reserved for single abscess cavity with thick pus. Laparotomy was only carried out for complication of abscess perforation in the general peritoneal cavity in one patient.

All collected pus was sent for gram staining, isolation of *E. histolytica*, culture and sensitivity.

A meticulous record of the demographic data, clinical presentation, radiological findings, laboratory reports, procedures performed, clinical progress, complications, duration of hospital stay was maintained in a previously prepared proforma for this purpose. All relevant data was statistically analyzed using proportional analysis on the SPSS software version 15.

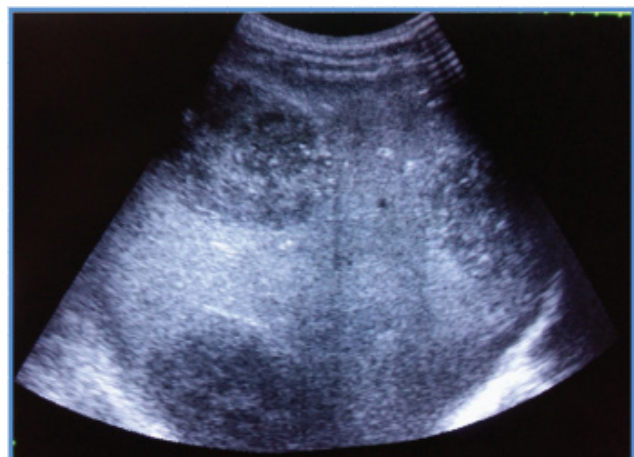
All patients were followed up for a period of three months following discharge to document recurrence if any as well as to assess completeness of treatment as evidenced by resolution of the abscess cavity on ultrasonography.

ETHICAL CONSIDERATION

Due permission was taken from the hospital ethical committee to carry out this study.

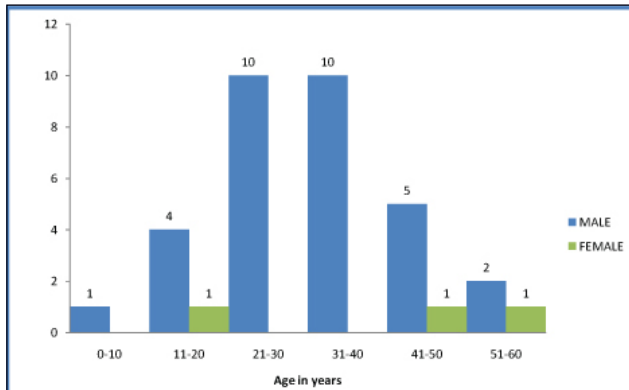
RESULTS

Thirty five patients of liver abscess admitted in the surgery and medical wards in a period of one year were included in this prospective study. Liver abscess was diagnosed on abdominal ultrasonography or CECT abdomen. 32 (91.4%) patients were males and only 3 (8.6%) were females with ages ranging from 10-60 years [Table/Fig-2] and a mean age of 32 years. All the patients were from a rural background. Pain in the right hypochondrium/epigastrium was the commonest complaint in 28 (80%) patients followed by fever in 9 (25.71%) patients. Right upper quadrant tenderness in 9 (25.71%), epigastric lump in 5 (14.29%) patients were the commonest signs [Table/Fig-3]. Pleural effusion was an associated finding in 11 (31.43%) patients. Ultrasonography had a sensitivity of 91.43% in diagnosis of liver abscess, the rest were diagnosed on CECT abdomen [Table/Fig-4]. The right lobe of the liver was affected in 21 (60%) patients. Amoebic liver abscess accounted for 20 (57.14%) patients



[Table/Fig-1]: Ultrasound showing multiple hypoechoic areas in the liver.

the rest 15 (42.86%) were pyogenic abscesses. Significant lab findings in ALA (amoebic liver abscess) patients were



[Table/Fig-2]: Age and Sex distribution of Liver Abscess.

Presenting Symptoms	No. of patients	Percentage of Total
Pain in right hypochondrium/epigastrium	28	80%
Fever	9	25.71%
Nausea/Vomiting	4	11.43%
Anorexia	5	14.29%
Generalized abdominal pain	2	5.71%
Cough	4	11.43%
SIGNS		
Right upper quadrant tenderness	9	25.71%
Hepatomegaly	7	20%
Jaundice	2	5.71%
Epigastric Lump	5	14.29%
Pleural effusion	11	31.43%
Ascites	3	8.57%
Back Pain	1	2.86%
Bronchopleural Fistula	1	2.86%

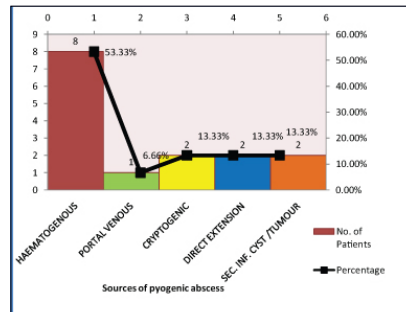
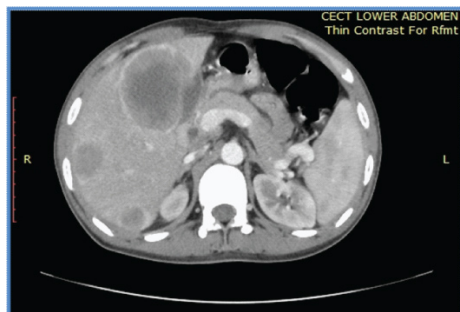
[Table/Fig-3]: Presenting symptoms and signs in cases of liver abscess.

anemia 14 (70%), hyperbilirubinemia 4(20%), raised alkaline phosphatase 14 (70%) and sterile pus culture. Leukocytosis >10,000/ μ l, raised alkaline phosphatase, raised prothrombin time in 12(80%) and *E.coli* in pus culture of 5 (33.33%) were significant findings in patients of pyogenic liver abscess. Hematogenous spread accounted for 8(53.33%) patients of pyogenic abscess [Table/Fig-5] Conservative treatment with antibiotics was all that was required in 6(30%), needle aspiration in 10(50%), Pigtail catheter drainage in 3(15%), [Table/Fig-6] and surgical drainage in 1(5%) patient of ALA. Only one patient required a second course of metronidazole two months after completion of treatment for right upper quadrant pain and associated fever attributed to a persistent incompletely resolved amoebic liver abscess on ultrasonography. The corresponding figures were 2(13.33%), 8(53.33%), 4(26.66%) and 1(6.66%) for pyogenic abscess [Table/Fig-7]. The average hospital stay was 10 days for ALA, and 14 days for pyogenic liver abscess. There was no mortality in this series.

DISCUSSION

Liver abscesses continue to have a high incidence in an economically deprived tropical area like ours. Thirty five cases reviewed in this prospective study gave an insight to the challenges they pose in diagnosis and management.

Most cases occurred in males with a mean age of 32 years similar to a study carried out in Oman [2]. Pain in the right hypochondrium/epigastrium and fever were the commonest complaints. Right upper quadrant tenderness, epigastric lump were the commonest signs as also in a study in UK [3]. The causes of pleural effusion in liver abscess is two-fold, viz, sympathetic effusion or rupture of the abscess in the pleural cavity [4] and was a common association in 31.43% of our patients. Ultrasonography which evidences liver abscess as a hypoechoic area showed a sensitivity of 91.43% in our series compared to 85.8% in a series from Taiwan [5]. Ultrasonography has limitations in the morbidly



[Table/Fig-4]: CECT abdomen showing multiple liver abscesses. [Table/Fig-5]: Sources of pyogenic liver abscess. [Table/Fig-6]: Pigtail catheter inserted into an amoebic liver abscess showing anchovy sauce pus in drainage bag.

	Amoebic liver abscess (No. of patients, N=20)	Percentage amoebic liver abscess	Pyogenic liver abscess (No. of patients, N=15)	Percentage pyogenic liver abscess
Conservative	6	30%	2	13.33%
Needle Aspiration	10	50%	8	53.33%
Pigtail Catheter Drainage	3	15%	4	26.66%
Surgical Drainage	1	5%	1	6.66%

[Table/Fig-7]: Treatment given in liver abscess.

obese and for lesions under the ribs. CECT was 100% sensitive the abscess appearing as a hypodense sharply demarcated mass in the liver. The right lobe is commonly affected as it contains a denser network of biliary canaliculi, 60% in our study comparable to 63.12% in other studies [6]. Liver abscess is the commonest extraintestinal manifestation of *Entamoeba histolytica* infection which travels via the portal vein from the colon to lodge in the liver. The abscess is usually solitary and contains anchovy sauce like pus which is also diagnostic and consists of necrosed hepatocytes. Rarely can *E. histolytica* be isolated in the pus [7] seen only in one (5%) patient in this study. Most abscesses can be managed conservatively with metronidazole as were 6(30%) patients. Needle aspiration was required in 10(50%) patients and is more frequently used in tropical countries to expedite treatment and provide immediate pain relief. Pigtail catheter insertion was required for thick abscesses unlikely to be aspirated by wide bore needles in 3(15%) patients. Laparotomy was required in one patient with liver perforation of the abscess. This was in accordance to recommendations by most authors for this disease [8]. The abscess cavity may take up to three months to completely subside on abdominal ultrasonography and should not guide treatment [9]. Pyogenic abscesses are usually multiple and hematogenous spread as a consequence of clinical conditions like urinary tract infection and appendicitis were the most common causes in 8(53.33%) patients. *E.Coli* was the commonest organism isolated in culture. Many authors have described biliary disease as the commonest etiology for these abscesses [10]. The high incidence of cryptogenic abscess occurs when investigations to define the primary source of infection are not meticulous enough. 8(53.33%) of patients required needle aspiration, 4(26.66%) pigtail catheter insertion, 2(13.33%) were treated conservatively with antibiotics and only one required laparotomy. These abscesses need pus to be drained for complete resolution [11]. The average hospital stay of 10 and 14 days in ALA and pyogenic abscesses is similar to other studies [12].

LIMITATION

The short period of study and brief follow-up allows us only to share our experience in effectively managing hepatic

abscesses in our set up. Recurrence rates and long term morbidity will be evident only when patients are followed for longer periods of time.

CONCLUSION

Microorganisms are filtered by Kupfer cells in the liver. When this mechanism is overwhelmed abscess may result. Amoebic pathology still beats pyogenic in its race to the liver in our study. Ultrasound guided percutaneous needle aspiration of the abscess gives immediate pain relief and when combined with antibiotics is treatment enough for most hepatic abscesses. The clinical progress of the patient should guide therapy as ultrasound resolution of the abscess cavity may take up to three months.

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