

LIVER ABSCESS IN TRIBAL POPULATION OF SOUTH RAJASTHAN; MANAGEMENT BY SONOGRAPHY GUIDED PERCUTANEOUS TUBE DRAINAGE IN 61 CASES IN FOUR YEARS

J. L. Kumawat¹, H. S. Udawat², F. S. Mehta³, P. K. Bhatnagar⁴, Pankaj Saxena⁵, Rita Saxena⁶

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ABSTRACT: Untreated, pyogenic liver abscess remains uniformly fatal. With timely administration of antibiotics and drainage procedures, mortality currently occurs in 5-30% of cases. The most common causes of death include sepsis, multi organ failure, and hepatic failure. (1) During the period of 4 years (2010-2014), 61 patients with liver abscess more than 5cms size underwent percutaneous catheter drainage under sonography guidance at Geetanjali Medical Collage and Hospital, Udaipur, Rajasthan. 48(78.68%) had solitary abscess while 10(16.39%) cases had double & 3(4.91%) had triple abscesses. 36(59%) had right lobe involvement, 15(24.59%) had left lobe involvement and 10(16.39%) had involvement of both the lobes. 30(49.98%) were in the age group of 41 to 70 yrs. 51 (83.60%) were males and 10(16.39%) were females. 40 (66.66%) were rural and 21(34.42%) were from urban population. All patients presented with pain right Hypochondrium, 46(75.40%) presented with high grade pyrexia, 26(42.62%) had nausea and vomiting, 10(16.39%) had loss of appetite and 10(16.39%) had associated respiratory discomfort. On exam all patients showed Hepatomegaly. Most cases had pyrexia, tachycardia and were toxic. Inv revealed low haemoglobin, raised total leucocyte count, deranged liver function tests. Ultrasonography revealed liver abscess and CT scan abdomen was confirmatory. (Fig. 1) All patients were treated with anti- biotics and PCNL Malicot catheter of various size 12F-14F was introduced in these patients using the Seldinger technique. The volume of pus drained ranged from 200 to 1500 ml while the period of catheter drainage was from 4day to 14 days. In 40(66.66%) patients, pus was sterile on culture (Amoebic) while 21(34.42%) cases had Bacterial positive culture. There was no mortality associated with this procedure.

KEYWORDS: Liver abscess, Hepatic abscess Panagement of liver abscess, Percutaneous drainage of liver abscess, Sheldinger techniques Causes of liver abscess, Pyogenic liver abscess, Amoebic liver abscess.

INTRODUCTION: Liver Abscess both Amoebic & Pyogenic is not uncommon problem of tropical countries.(2) Specially among the lower socioeconomic class living with poor hygienic sanitary conditions.(3) Although the primary mode of treatment of amoebic liver abscess is medical and needle aspiration but in abscess cavity larger than 5cms in size catheter drainage is treatment of choice. Percutaneous catheter drainage, under sonographic guidance, is safe & effective mode of treatment of Liver abscess with low morbidity and no mortality. It results in an early relief of symptoms & faster resolution of abscess cavity. Ultra sonographic guidance allows real-time

ORIGINAL ARTICLE

imaging of position, angle & depth of abscess along with the presence of intervening or adjacent vital structure (eg: bowel, lung, spleen, liver) which increase the overall risk of drainage.⁽⁴⁾

Percutaneous placement of drain is now mainstay of treatment of liver abscess more than 5cms in size.⁽⁵⁾ Amoebic liver Abscess is most common manifestation of extra intestinal Amoebiasis & causative agent is a protozoan, *Entamoeba histolytic*.⁽⁶⁾ The common presentation includes pain in right hypochondrium, fever, Nausea and vomiting, loss of appetite, Jaundice and respiratory problems are less frequent features of disease.⁽⁷⁾ Abdominal tenderness and hepatomegaly were the most helpful signs in suggesting a liver abscess. Reactionary pleural effusion was common respiratory finding.

MATERIAL & METHODS: The present study was carried out in 61 patients with the liver abscess admitted to the GMCH, Udaipur during the period of 4 years (2010 to 2014). All patients with the confirmed diagnosis of liver abscess were included in this study. The following tests were performed in all the patients complete blood count, urine examination, liver function test, X-ray chest, abdominal sonography and C.T. scan as & when required. Abscess less than 5cms were managed by medically and needle aspiration. Abscess more than 5 cm were managed by percutaneous catheter drainage.

TECHNIQUE: Seldinger technique was used for catheter drainage. Abscess was localized by USG and safe drainage route planned to avoid the bowels and costo-phrenic recess. The site of drainage was marked under all aseptic condition where minimum depth from the skin was noted. The site was infiltrated with 2% Xylocaine & 4mm skin incision was made and through which 18G guide wire introducer needle was passed under sonographic guidance till it reached the centre of the cavity. A guide wire (cordis 0.038 Johnson & Johnson) was then introduced through the needle and positioned inside the cavity following which the needle was removed keeping the guide wire in situ. Serial dilators (PCNL dilators) were then passed over the wire to dilate the track up to 12 or 14 F size. A PCN melecots catheter of size equal to the size of dilator was passed over the wire and positioned in the centre of the abscess cavity under sonographic guidance. The guide wire was then withdrawn and PCN melecots catheter fixed to skin with suture and connected with drainage bag and pus sent for cytology and bacteriology. (Fig. 2) In patient with thin pus on aspiration we use 12F catheter while 14F catheter for thick pus with debris. Patient is ambulatory on the same day in ward. Amount of pus drainage in 24 hours was monitored and catheter was flushed daily to prevent blockage with 10ml normal saline. The drainage catheter was removed when drainage become less than 20ml to 30ml/24 hours. All the pts were advised to come for monthly follow up for clinical and ultrasonography evaluation. It is also effective in those patients who fail to respond with needle aspiration twice.⁽⁸⁾ Patients were followed up monthly for 3 months or till asymptomatic residual cavity of abscess is less than 3cm radiologically.⁽⁹⁾

ORIGINAL ARTICLE

RESULTS:

Male	Female	Ratio
51 (83.60%)	10 (16.39%)	5:1

Table 1: Male Female Ratio

51(83.60%) were males and 10 (16.39%) were females. Ratio of 5:1.

Age	No. of Patients
20-30	11(18.03%)
31-40	5(8.19%)
41-50	20(32.78%)
51-60	10(16.39%)
61-70	5(8.19%)
71-80	10(16.39%)

Table 2: Age Distribution

Maximum 30(49.98%) were in the age group of 41 to 60 yrs.

Rural	Urban	Ratio
40(66.66%)	21(34.42%)	2:1

Table 3: Urban and Rural Distribution

40(66.66%) were rural and 21(34.42%) were from urban population.

Symptom	No. of cases	%
Upper Abdominal Pain	61	100
High Grade Fever	46	75.40
Nauseas & Vomiting	26	42.42
Loss of Appetite	10	16.39
Respiratory Symp.	10	16.9

Table 4: Clinical Presentation

All patients presented with pain right Hypochondrium, 46(75.40%) presented with high grade pyrexia, 26(42.62%) had nausea and vomiting, 10(16.39%) had loss of appetite and 10(16.39%) had associated respiratory discomfort.

ORIGINAL ARTICLE

Rt lobe	Lt lobe	Both
36(59%)	15(24.59%)	10(16.39%)

Table 5: Involvement of Lobes of Liver

36(59%) had right lobe involvement, 15(24.59%) had left lobe involvement and 10(16.39%) had involvement of both the lobes.

Solitary	Double	Triple
48(78.68%)	10(16.39%)	& 3(4.91%)

Table 6: Number of abscess

48(78.68%) had solitary abscess while 10(16.39%) cases had double & 3(4.91%) had triple abscesses.

Sterile	Positive
40(66.66%)	21(34.42%)

Table 7: Bacterial Culture

In 40(66.66%) patients, pus was sterile on culture (Amoebic) while 21(34.42%) cases had Bacterial positive culture

Post-Operative Day	No. of cases	%
4 th P.O. day	35	58.33
5 th P.O. day	11	18.75
6 th P.O. day	12	18.75
10 th P.O. day	3	4.90

Table 8: Removal of Drainage Tube

The catheter was removed when drainage becomes serous and it either ceased or was minimal (20ml in 24 hrs).

In 35(58.3%) out of 61 patients tube were removed on the 4th postoperative day while in 23(37.70%) patients tube was removed on the 5th & 6th day. Only in 3(4.90%) patients tube was removed on 10th postoperative day.

DISCUSSION: Bacterial abscess of the liver is relatively rare; however, it has been described since the time of Hippocrates (400 BC), with the first published review by Bright appearing in

ORIGINAL ARTICLE

1936. In 1938, Ochsner's classic review heralded surgical drainage as the definitive therapy; however, despite the more aggressive approach to treatment, the mortality rate remained at 60-80%.⁽¹⁰⁾ The development of new radiologic techniques, the improvement in microbiologic identification, and the advancement of drainage techniques, as well as improved supportive care, have decreased mortality rates to 5-30%; yet, the prevalence of liver abscess has remained relatively unchanged. Untreated, this infection remains uniformly fatal.⁽¹¹⁾ present study there has been no mortality.

Pyogenic abscess, which is most often polymicrobial, accounts for 80% of hepatic abscess cases in the United States. Amoebic abscess due to *Entamoeba histolytica* accounts for 10% of cases. Fungal abscess, most often due to *Candida* species, accounts for less than 10% of cases.⁽¹²⁾ present study shows In 40(66.66%) patients, pus was sterile on culture(Amoebic) while 21(34.42%) cases had Bacterial positive culture.

The right hepatic lobe is affected more often than the left hepatic lobe by a factor of 2:1.⁽¹³⁾ Bilateral involvement is seen in 5% of cases. In the present study 36(59%) had right lobe involvement, 15(24.59%) had left lobe involvement and 10(16.39%) had involvement of both the lobes.

While abscesses once showed a predilection for males in earlier decades present study 51(83.60%) were males and 10(16.39%) were females. Ratio of 5:1 Prior to the antibiotic era, liver abscess was most common in the fourth and fifth decades of life, primarily due to complications of appendicitis. With the development of better diagnostic techniques, early antibiotic administration, and the improved survival of the general population, the demographic has shifted toward the sixth and seventh decades of life. Present study showed Maximum 30(49.98%) were in the age group of 41 to 60 yrs.⁽¹⁴⁾

The most frequent symptoms of hepatic abscess include Fever (either continuous or spiking) Chills Right upper quadrant pain Anorexia Malais Fever and tender hepatomegaly are the most common signs. A palpable mass need not be present. Mid epigastric tenderness, with or without a palpable mass, is suggestive of left hepatic lobe involvement. Decreased breath sounds in the right basilar lung zones, with signs of atelectasis and effusion on examination or radiologically, may be present. A pleural or hepatic friction rub can be associated with diaphragmatic irritation or inflammation of Glisson capsule. Jaundice may be present in as many as 25% of cases and usually is associated with biliary tract disease or the presence of multiple abscesses. CBC count with differential Anemia of chronic disease Neutrophilic leukocytosis Liver function studies Hypoalbuminemia and elevation of alkaline phosphatase (most common abnormalities) Elevations of transaminase and bilirubin levels (variable) Blood cultures are positive in roughly 50% of cases. Culture of abscess fluid should be the goal in establishing microbiologic diagnosis. Enzyme immunoassay should be performed to detect *E histolytica* in patients either from endemic areas or who have traveled to endemic areas.⁽¹⁵⁾

Computed tomography (CT) scan evaluation with contrast and ultrasonography remain the radiologic modalities of choice as screening procedures and also can be used as techniques for guiding percutaneous aspiration and drainage. Percutaneous needle aspiration Under CT scan or ultrasound guidance, needle aspiration of cavity material can be performed. Needle aspiration enables rapid recovery of material for microbiologic and pathologic evaluation. Needle aspiration

ORIGINAL ARTICLE

can be performed with the initial diagnostic procedure. Percutaneous catheter drainage Percutaneous drainage has become the standard of care and should be the first intervention considered for small cysts. For cysts greater than 5 cm, ruptured cysts, and multi-loculated cysts, surgical drainage is generally recommended over percutaneous intervention. Advantages include reduced costs, recovery time, and postprocedure recovery rate; it eliminates the need for general anesthesia. This also allows for gradual, controlled drainage. A catheter is placed under ultrasound or CT guidance using the Seldinger or trocar techniques. The catheter is flushed daily until output is less than 10 cc/d or cavity collapse is documented by serial CT scanning. Multiple abscesses have been drained successfully by this method.⁽¹⁶⁾ Failure to respond to catheter drainage is the main reported complication and is also an indication for surgical intervention. Other complications reported (rarely) are bleeding at the catheter site, perforation of hollow viscus, and peritonitis from intraperitoneal spillage of cavity fluid. Contraindications include coagulopathy; a difficult access path to the cavity; peritonitis; and/or a complicated, multiloculated, thick-walled abscess with viscous pus.⁽¹⁷⁾ Four major types of intrahepatic fluid collections are included in the differential diagnosis: primary pyogenic abscess, secondary pyogenic abscess due to an infected tumor or hematoma, amoebic abscess, and echinococcal cyst. Distinction among these entities is important because it will determine both the specific type of antimicrobial therapy and the method of decompression, if any.

Liver Abscess has been recognized since the time of Hippocrates, who notified large hepatic abscess likely to be amoebic Abscess. Amoebiasis affects approximately 10% of the population all over world.² It is the most common extra intestinal manifestation of Amoebiasis, accounting about 3-9% of patients.^{1,3} Typically anchovy sauce color of abscess is pathognomonic of Amoebic liver Abscess. Amoebic abscesses are commonly confused with pyogenic abscesses. The clinical distinction between the two is difficult since both can have elevated temperatures, WBC counts, and liver function tests, and both can have right-upper-quadrant symptomatology.^[7] CT and sonography also are nonspecific, although the typical amoebic abscess is hypoechoic with poor wall definition.^[8,9] If amoebic abscess is suspected clinically, needle aspiration may be necessary for confirmation. This is particularly helpful if the patient is acutely ill and the diagnosis is uncertain. The fluid will often have an "anchovy paste" texture and color, and amoebae can be found in at least 30% of aspirates.^[10,11] An attempt should be made to biopsy the wall because occasionally the trophozoites may be visualized by cytologic analysis. Perhaps most important, the aspirate can be examined for bacteria to exclude a pyogenic abscess.^[10]

Before the era of U.S.G., diagnosis was difficult, mainly because of significant overlapping in the presentation & clinical finding of amoebic abscess, Infected hydatid cyst & pyogenic abscess,⁸ especially in third world countries (like India & Bangladesh) where lower socioeconomic class living with poor hygienic & sanitary condition were mostly affected.^{2,7} Mostly uncomplicated amoebic liver abscesses smaller than 5cms sizes were managed by antibiotics metrogyl and needle aspiration while those above 5cms size were managed by percutaneous drainage. Secondary bacterial infection of an amoebic liver abscess is a rare event.^{15,16}

In modern era, ultrasonographic & C. T. have changed the outlook of patients with liver abscess by making the diagnosis much easier than it was to be in the past. There is a tremendous change in the treatment modalities, unnecessary laparotomies & surgical drainage is

ORIGINAL ARTICLE

replaced by accurate & targeted percutaneous drainage under Ultra sonographic guidance.^{10,11} Over the past 20 years, Percutaneous Abscess Drainage (PAD) has evolved from revolutionary to routine, replacing open surgical abscess drainage in all & the most difficult or inaccessible cases.

Needle aspiration is simple, safe & acceptable treatment of choice in liver abscess less than 5cm in diameter under US guidance.^{9,12,17,18} In few patients may require multiple intermittent aspiration if cavity is not regress and clinically improvement is not satisfactory e. g. presence of fever & pain. It is easy to perform as a outdoor procedure, less invasive, low cost with medical & nursing care & avoid problems related with catheter care but not suitable for multiloculated abscess or large size abscess.^{8,9,12,18} Catheter drainage provides continuous drainage, avoiding the problems of repeated aspiration and complete evacuation of abscess.^{8,9} Except catheter blockage in six patients we have no other reported complication like hemorrhage, perforation of hollow viscera or catheter displacement and septicemia.^{5,9}

CONCLUSION: Percutaneous drainage is now considered the treatment of choice for most intra-abdominal abscesses and fluid collections.⁽¹⁸⁾ Pyogenic liver abscesses respond well to percutaneous drainage,⁽¹⁹⁾ provided that certain essential technical and clinical details are emphasized to ensure successful therapy. These include differential diagnosis with the aid of cross-sectional imaging and percutaneous needle aspiration; awareness of the clinical-radiologic manifestations of pyogenic liver abscess; and proper catheter positioning to avoid contamination of the subphrenic, perihepatic, and pleural spaces.⁽²⁰⁾

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Fig. 1: CECT–Abdomen (Showing three liver abscesses)



Fig. 2: Percutaneous Cathet

AUTHORS:

1. J. L. Kumawat
2. H. S. Udawat
3. F. S. Mehta
4. P. K. Bhatnagar
5. Pankaj Saxena
6. Rita Saxena

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of General Surgery, Geetanjali Medical College and Hospital, Udaipur, Rajasthan.
2. Assistant Professor, Department of General Surgery, Geetanjali Medical College and Hospital, Udaipur, Rajasthan.
3. Professor, Department of General Surgery, Geetanjali Medical College and Hospital, Udaipur, Rajasthan.

4. Associate Professor, Department of Department of Obstetrics and Gynaecology, JMCH, Udaipur, Rajasthan.
5. Professor, Department of General Surgery, Geetanjali Medical College and Hospital, Udaipur, Rajasthan.
6. Assistant Professor, Department of General Surgery, Geetanjali Medical College and Hospital, Udaipur, Rajasthan.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. J. L. Kumawat,
New Colony, Savima,
Udaipur, Rajasthan-313001
E-mail: dr.jlkumawat@gmail.com

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