

“A Prospective Study Of Clinical Profile & Management Strategies Of Liver Abscess ”

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Abstract

Objective: To study clinical profile and etiology of liver, to determine the role of ultrasonography in the management of liver abscess and the outcome associated with different treatment strategies of liver abscess.

Materials and methods: All patients with liver abscess 2015 to 2018 were included in this study. 50 patients with liver abscess who reported to various departments of Subharti Medical College, Meerut, were included in the study. The patients were treated with antibiotic alone for abscess size <5 cm, patients were treated with percutaneous needle aspiration for abscess size 5-10 cm and for abscess more than 10 cm patients were treated with pigtail catheterization. Those patients who presented with ruptured liver abscess were treated by surgical approach by laparotomy. PNA was repeated every third day if the cavity size had not declined to 50% of the original for up to twice times on repeat USG. Persistence of cavity or of clinical symptoms was considered failure of treatment.

Results: Out of 50 patients 9 patients were treated with antibiotic alone. 14 patients were treated with percutaneous needle aspiration. 20 had to be treated with pigtail catheterization. 3 patients were treated by surgical approach by laparotomy. 1 patient was treated with antibiotics alone failure followed by PNA and 3 were treated with PNA failure followed by pigtail catheterization. The maximum amount of pus that was aspirated by needle aspiration was approximately 200 cc. whereas in pigtail catheterization as much as 1000 cc of pus was evacuated over 2 weeks.

Conclusion: Abscess size less than 5 cms can be treated conservatively with antibiotics alone. Further needle aspiration is also a good modality of treatment for abscess 5-10 cms in size. Pigtail catheterization (PCD) was considered the most effective modality of treatment for abscess size >10 cms with nearly 100% success rate. Thus we can conclude that PCD is the most effective conservative modality of treatment for liver abscess. However in cases of ruptured liver abscess surgical exploration with laparotomy is the only modality of treatment with significant morbidity and mortality rate due to septicemia and respiratory complications.

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I. Introduction

Liver abscess is a common condition in India. India has 2nd highest incidence of liver abscess in the world. Liver abscesses are caused by bacterial, parasitic or fungal infection. It is of 2 types. Amoebic liver abscess which is a common extra-intestinal manifestation of infection with *Entamoeba histolytica* carries significant morbidity and mortality rate. Pyogenic abscess also carries significant mortality so early diagnosed prompt treatment are necessary to further improve our results of management. The World Health Organisation reported that

Entamoeba histolytica causes approximately 50 million cases and 100,000 deaths annually. The vast majority of these infections are acquired in the developing world. In a country like India where majority of population lives below poverty line, basic sanitary facilities are lacking. This problem coupled with overcrowding and urban slums with unhygienic eating habits sets the stage for communicable diseases like amoebiasis. Primary prevention by improving sanitation, health education, early diagnosis and prompt treatment may result in lowering mortality / morbidity associated with the disease. This study is directed towards the clinical profile, risk factors and management strategies of liver abscesses.

II. Aims And Objectives

To study clinical profile and etiology of liver to determine the role of ultrasonography in the management of liver abscess and the outcome associated with different treatment strategies of liver abscess.

III. Materials And Methods

The present study was conducted in the Department of General Surgery Subharti Medical College, Meerut. Ethical approval was taken from ethical committee prior to commencement of the study.

50 patients with both pyogenic and amoebic liver abscess admitted to our institution between September 2015 to October 2017 were enrolled. Patient data was collected from attending, general surgery outdoor patient department, casualty and inpatient departments, irrespective of gender background socioeconomic status. Detailed history of patient was entered in a proforma. Complete hemogram, renal function test, function test (LFT), prothrombin time, bleeding time, and viral markers were done. Preliminary ultrasound was done on the same day and x-ray whole abdomen erect was also done. Patients were treated according to respective protocol daily. Patient on conservative line was followed up daily. Patient was informed about any surgical procedure and consent was taken for the same.

Patient data collected regarding:

Age, gender, complaints, past-surgical history, past history of liver abscess, history of alcoholism, diabetes, any immunodeficiency states, any history of biliary tract disorder, history of amoebic dysentery, jaundice was taken. Patient was examined in detail. If the patient was referred from elsewhere the details of the same were considered at the time of admission. Blood investigations and X-rays and other radiological modalities performed were added. Complications if developed were assessed in detail and management of the same and the further complications were followed up.

Management strategies are as follows

1. Antibiotics alone (unruptured abscess size < 5 cms)
2. Percutaneous needle aspiration + Antibiotic coverage (unruptured abscess size 5-10 cms)
3. Percutaneous catheter drainage + Antibiotics coverage. (unruptured abscess size > 10 cms)
4. Open surgical drainage or laparoscopic surgical (in ruptured abscess)

Percutaneous Catheter Drainage (USG Guided)

The drainage technique is a trocar method with an 8-French multiple-side hole pigtail catheter (Boston Scientific) introduced into the abscess cavity. The procedure will be performed with local anaesthesia (xylocaine 2%), the patient supine. Conscious sedation will not be used. Careful localization of the abscess and proper selection of the entry site will be required. The optimal route of access traversed the least possible amount of liver tissue and avoided pleura. Aspiration will be performed with the catheter until no more pus is removed. The catheter then will be secured to the skin for continuous external drainage and will be left in place until production of content stopped.

Needle Aspiration (USG Guided)

Evacuation of pus from an abscess will be performed with an 18-gauge disposable trocar needle. Sonography will be performed every 3 days, and the size of the abscess cavity will be recorded. If there will be no significant reduction in the abscess cavity on control examination, aspiration will be repeated. Repeated aspiration will be attempted a maximum of twice for each patient not responding; lack of response to a third aspiration attempt will be considered failure of treatment, and a catheter for continuous drainage will be introduced. Patients who will need this treatment shall not be included in the PCD group.

Inclusion Criteria:

1. All cases of liver abscess diagnosed clinically and/or ultrasonographically.
2. All cases of bacterial and parasitic liver abscess
3. All cases in evolving, liquefied & ruptured stage with or without peritonitis
4. All cases of clinical liver abscess with elevated total leucocyte count (TLC), LFT, Increased Prothrombin time and/or Serologically amoebic antigen positive.
5. All cases of Diagnosed Liver Abscess being referred to SIMS

Exclusion Criteria:

- Secondaries mimicking Liver abscess.

Observation And Result

50 patients with Liver abscess who reported to various departments of Subharti Medical College, Meerut, were included in the study. Out of total 50 patients in the study group, 43 were males & 7 were females. The maximum patients were in the age group of 41-50 yrs.

It was observed that pain in abdomen was present in 49 out of 50 patients of study group which is 98% of total patients. The second most common symptom noticed was fever seen in 46(92%) patients, followed by cough in 18(36%) patients & jaundice in 07(14%). Diarrhoea was found to be the least common symptom present only in 6(12%) patients.

Symptoms	Number of patients	Percentage
Pain abdomen	49	98%
Fever	46	92%
Cough	18	36%
Jaundice	7	14%
Diarrhoea	6	12%

It was observed that abdominal tenderness was present in all 50 patients of study group which is 100% of total patients. The second most common sign noticed was fever seen in 47(94%) patients, followed by hepatomegaly in 39(78%) patients & respiratory signs in 19(38%). Icterus was found in only 8(16%) patients whereas pallor was seen in only 7(14%) patients. Splenomegaly was seen in 5(10%) patients. The least common sign present only in 3(6%) patients was shock.

Clinical sign	Number of patients	Percentage
Abdomen tenderness	50	100%
Fever	47	94%
Hepatomegaly	39	78%
Respiratory findings	19	38%
Icterus	08	16%
Pallor	07	14%
Splenomegaly	05	10%
Shock	03	06%

Out of 50 patients 9 patients were treated with antibiotic alone (abscess size <5 cm). 14 patients were treated with percutaneous needle aspiration (abscess size 5-10cm). 20 had to be treated with pigtail catheterization (abscess size >10). 3 patients were treated by surgical approach by laparotomy. 1 patient was treated with antibiotics alone failure followed by pna and 3 were treated with pna failure followed by pigtail catheterisation. The maximum amount of pus that was aspirated by needle aspiration was approximately 200cc. whereas in pigtail catheterisation as much as 1000cc of pus was evacuated over 2 weeks.

Treatment	Number of patients	Percentage
Antibiotic coverage only (Conservative)	9	18%
Percutaneous Aspiration + Antibiotics	14	28%
Pigtail catheter + Antibiotics	20	40%
Surgical Approach by laprotomy	3	6%
Antibiotic failure followed by needle aspiration	1	2%
PNA failure followed by PCD	3	6%
PCD failure followed by surgical approach	0	0

IV. Discussion

Our study supports that the most common etiological organism of liver abscess is Entamoebahistoltyca with 48% patients which is similar with [C L Rajak, et al \(1998\)](#)¹, [Rustam Khan et al \(2008\)](#)² who found similar findings. This observation is different from that [S. ChYu, et al \(1997\)](#)³, [A.H. Mohsen, et al \(2002\)](#)⁴, [Lübbert C, et \(2014\)](#)⁵ which showed bacterial infection as the most common etiological organism. Our study further shows that among bacterial causes klebsiella genus was most commonly found organism with 20% patients. The clinical features of liver abscess are so distinctive that the diagnosis of disease can be easily made on the basis of clinical features. The disease starts with prodromal symptoms and then advances to produce marked clinical features and ultimately leading to abscess rupture and other complications. In present study, nearly all cases of liver abscess showed symptoms of pain abdomen (98%), fever (92%) which is very similar to the findings of [Alpesh B. Amin](#)⁶, who also found 96% patients having pain abdomen, 68% cases having fever. The frequency of clinical signs of abdominal tenderness (100%), fever (94%) as found in our study was quite similar to other studies like that by [P Malik, et al \(2014\)](#)⁷ [Abhinav Mittal \(2014\)](#)⁸ Serum bilirubin levels >1.3mg/dl were seen in 14(28%) patients however clinical jaundice was seen only in 8 patients with serum bilirubin levels of >3mg/dl.

3 patients with ruptured abscesses showed features of peritonitis with guarding and rigidity and abdominal distension. USG in the patients showed free fluid in peritoneal cavity. Our study showed that right lobe of the liver was most commonly involved with 41 out of 50 patients (82%) which is consistent with the study of **José A. Alvarez, et al (2001)**⁹, **Kurland JE, et al (2004)**¹⁰. The study further showed that solitary abscess is more common than multiple abscesses with 62% patients having single abscess which is consistent with the study of **Seeto RK, et al (1996)**¹¹. However, the observation is different from the study of **Alton Ochsner, et al (1938)**¹² which showed multiple abscesses in 71.1% patients.

The study showed that liver abscesses of size less than 5 cms can be treated conservatively with antibiotics alone with 9 out of 10 patients successfully treated and showed reduction in abscess size by more than 50% on repeat USG done after 7 days of treatment which is consistent with the findings of **D A Herbert, et al (1982)**¹³ and **Alpesh B. Amin, et al (2015)**⁶. Further for abscess size between 5-10 cms needle aspiration is a good modality of treatment with 14 out of 17 patients treated successfully with only 3 patients who failed requiring pigtail catheterisation. However, 4 out of these 14 patients required repeat needle aspiration 3 days later after they failed to show more than 50% reduction in abscess size on repeat USG.

Which is similar to the findings of **Gurjeet Dulku, et al (2015)**¹⁴

The study further showed that pigtail catheterisation is the treatment of choice for abscess size more than 10 cms with nearly 100% success rate.

However in cases of rupture of liver abscess exploratory laparotomy is still the only modality of treatment with high rate of morbidity and mortality. Which is consistent with the study of **Sukhjeet Singh et al, (2013)**¹⁵. Out of 3 patients who were diagnosed with ruptured liver abscess 1 died after developing septicaemia and cardiac arrest.

In last few years there is a change in trend in etiology and treating these abscesses more conservatively and by less traumatic means compared to open surgical procedures. The primary mode of treatment of amoebic liver abscess is medical. However, as many as 15% of amoebic abscesses may be refractory to medical therapy. In such patients and in patients with pyogenic liver abscesses, surgical drainage has been the traditional mode of treatment. However operative drainage is associated with significant (10-47%) morbidity and mortality. In recent years imaging guided percutaneous drainage using catheters has been increasingly used to treat liver abscesses with reported success rates ranging from 70-100%. Also few studies have shown therapeutic needle aspiration to be a simpler and less costly mode of treatment, but needs repeated aspiration, with more failure rates. Though every abscess should be treated on its individual merits, there is a need to define indications to adopt particular method of treatment so as to reduce morbidity, avoid mortality, make the treatment affordable and to achieve a highest cure rate.

Follow up of patients:

- A. Patients will be followed up for a period of 2 months:
- B. 1) once in 2 weeks for 2 months

V. Conclusion

The following conclusions were drawn.

In our sample we observed that

1. Liver abscess was much more common in males than females with a preponderance of almost (86%) in males. The peak incidence seen in the age group of 41-50 yrs which accounted for almost (26%) of the cases. Pain abdomen was the most common symptom which accounted for almost (98%) of patients followed by fever seen in 92% of patients. All patients with liver abscess presented with abdominal tenderness on clinical examination with fever as the second most common sign involving 94% of patients. Solitary abscess is more common than multiple abscess as on ultrasonography, as nearly 62% patients were found to have solitary abscess. Right lobe of the liver was more commonly involved as seen in 82% of the patients. The study showed that parasitic infestation in the form of *Entamoeba histolytica* is the most common cause of liver abscess involving 48 % of patients. Among bacterial causes *Klebsiella* genus was found to be the most common organism seen in culture of 20% patients. The study shows that alcohol does have a significant role in the pathogenesis of liver abscess with 22% patients having history of alcohol intake of which duration of alcohol intake was less than 10 years in 54.5% patients and more than 10 years in 45.5% patients. The study showed that early diagnosis with USG had a significant role in decreasing the morbidity and mortality, in deciding the mode of treatment and in managing the liver abscess conservatively through percutaneous needle aspiration (PNA) or Pigtail catheterisation (PCD). The study further showed that abscess size less than 5 cms can be treated conservatively with antibiotics alone with only 1 patient out of 10 needed needle aspiration after 1 week of antibiotics. Further needle aspiration is also a good modality of treatment for abscess 5-10 cms in size with 14 patients successfully treated out of 17. of which only 4 patients required needle aspiration twice. Pigtail catheterisation (PCD) was considered the most effective modality of treatment for abscess size >10 cms with nearly 100% success rate. Thus we can

conclude that PCD is the most effective conservative modality of treatment for liver abscess. However in cases of ruptured liver abscess surgical exploration with laparotomy is the only modality of treatment with significant morbidity and mortality rate due to septicaemia and respiratory complications.

References

- [1] C L Rajak, Saurabh Gupta, Shashank Jain, Samiksha Suri. Percutaneous treatment of liver abscesses: needle aspiration versus catheter drainage. American Journal of Roentgenology April 1998; 170(4):1035-9.
- [2] Rustam Khan, Saeed Hamid, Shahab Abid, Wasim Jafri, Zaigham Abbas, Mohammed Islam, Hasnain Shah, Shaalan. Predictive factors for early aspiration in liver abscess. Begwjgast; April; 2008; 14(13):2089-2093.
- [3] S. Ch Yu I, R. Hg Lo, P.S. Kan, C. Metreweli. Pyogenic liver abscess: treatment with needle aspiration. Clin Radio; Dec 1997; 52(12):912-916
- [4] Mohsen AH, Green ST, Read RC, et al. Liver abscess in adults: ten years experience in a UK centre. QJ Med 2002; 95:797-802.
- [5] Lübbert C, Wiegand J, Karlas T. Therapy of liver abscesses. Viszeralmedizin. Oct 2014; 30(5):334-41
- [6] Alpesh B. Amin, Rajesh D. Patel, Chirag Doshi, Amit V Bhuva. A comparative study of different modalities of treatment of liver abscess. IAIM, 2015; 2(4): 11-16.
- [7] P Malik, H N Lakshmi, M Rathi, D Saini, R. Arya. A Prospective study of liver abscesses: clinical profile and management of 100 cases admitted in a single surgical unit of the SMS hospital in Jaipur, India. Ijoid 2014 ; 13 (1.); 1-6
- [8] Abhinav Mittal, Raj. K. Kanojiya, Raghav Tania, Subhash .C .Dutt. A comparative study of factors affecting outcome of various modalities of treatment in liver abscess our experience of 100 cases. Ijomas, 2014; 3(3):264-278.
- [9] Alvarez JA, González JJ, Baldonado RF, Lourdes Sanz Guillermo Carreñoc José I. Jorge. Single and multiple pyogenic liver abscesses: etiology, clinical course, and Outcome. Dig Surg 2001; 18:283-288.
- [10] Kurland JE, Brann OS. Pyogenic and amebic liver abscesses. Curr Gastroenterol Rep, 2004; 66(4): 27-30
- [11] Seeto RK, Rockey DC. Pyogenic liver abscess: Changes in etiology, management and outcome. Jom 1996; 75: 99-113
- [12] Ochsner A, DeBakey M, Murray S. Pyogenic abscess of the liver. Am J Surg 1938; 40:292-353.
- [13] Herbert D.A., Fogel D.A., Rothman Jeffrey, Ruskin Joel. Pyogenic liver abscesses: successful non-surgical therapy. The Lancet Feb; 1982; 8264(1):134-6.
- [14] Gurjeet Dulku, Geeta Mohan, Shaun Samuelson, John Ferguson, Jonathan Tibballs. Percutaneous aspiration versus catheter drainage of liver abscess: a retrospective review. Aus medj; 2015; 8(1): 7-18.
- [15] Sukhjeet Singh, Poras Chaudhary, Neeraj Saxena, Sachin Khandelwal, Deva. D. Poddar, Upendra C. Biswal. Treatment of liver abscess: prospective randomized comparison of catheter drainage and needle aspiration. Ann Gastroenterol. 2013; 26(4): 332-339.

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