International Surgery Journal
Reddy P et al. Int Surg J. 2019 Jul;6(7):2439-2443
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20192970

Original Research Article

A study of treatment outcomes of liver abscess in a rural tertiary care centre

Pooja Reddy, Ashwin K.*, N. Srinivasan, Manjush Ramesh Halbhavi

Department of General Surgery, PESIMSR, Kuppam, Andhra Pradesh, India

Received: 17 March 2019
Accepted: 17 May 2019

***Correspondence:**
Dr. Ashwin K.,
E-mail: drashwink47@gmail.com

ABSTRACT

Background: Liver abscess is a cavity resulting from suppuration following invasion and multiplication of microorganisms. In tropical countries like India, pyogenic and amoebic liver abscesses are common clinical problems and an important cause of mortality and morbidity. Approach in management has changed with advances in radiological interventions. Image guided percutaneous drainage is nowadays increasingly used as treatment modality with high success rate. This study was undertaken to know the efficacy of various modalities of treatment (conservative and minimally invasive).
Methods: This was a descriptive prospective observational study done at PES Institute of Medical Sciences and Research, Kuppam for a period of 2 years. A set of inclusion and exclusion criteria were defined and followed. Initial assessment, basic investigations with specific investigations (Ultrasonography-USG) were done. Relevant treatment modality was given and patients were followed up for a period of 1 month.
Results: A total of 72 patients were included in this study. Majority of the patients were between the age groups of 31 to 50 years with male predominance. The most common presenting symptoms were fever and pain abdomen. Success rate was 83.3% with Percutaneous needle aspiration (PNA) and 90% with Percutaneous (pigtail) catheter drainage (PCD).
Conclusions: Image guided modalities of treatment (PNA and PCD) have decreased the need for surgical procedures which are associated with higher rate of morbidity and mortality. These procedures have also decreased the complications of liver abscess like rupture, sepsis and are also cost-effective.

Keywords: Liver abscess, Percutaneous catheter drainage, Percutaneous needle aspiration, Ultrasonography

INTRODUCTION

Liver abscess is a cavity resulting from suppuration following invasion and multiplication of microorganisms. Ascending portal pyemia is an increasingly important causative factor, and the other causes being injury through blood vessels.[1,2] In tropical countries like India, pyogenic and amoebic liver abscesses are common clinical problems and an important cause of mortality and morbidity. Pyogenic and amoebic liver abscesses both affect right lobe of liver more commonly.[3,4] The patients present with fever, pain abdomen, vomiting and leukocytosis.

The management of liver abscess has changed over the last few decades. Approach has changed with advances in radiological interventions. Early diagnosis and accurate guidance for percutaneous approach for drainage or aspiration has been possible by ultrasound imaging and computed tomography (CT).[2,5,6] Image guided percutaneous drainage is nowadays increasingly used as treatment modality with success rate between 70-100%

and have become mainstay in the management.[6-11] Nowadays surgical drainage is being used in patients not responding to antibiotics or percutaneous methods. This study was undertaken to know the efficacy of various modalities of treatment (conservative and minimally invasive).

METHODS

Patients admitted with liver abscess in the Department of General Surgery, People's Education Society Institute of Medical Sciences And Research over a period of 2 years from July 2016 to September 2018 were included in the study after fulfilling inclusion criteria.

This study was a prospective descriptive study. Ultrasonography (USG) was used as a diagnostic modality and follow up was done weekly for a period of 1 month.

Inclusion criteria

- Age above 18 years
- Uncomplicated hepatic abscess

Exclusion criteria

- Complicated (ruptured Abscess) needing emergency surgical intervention
- Patient with co-morbidities

Functional outcome were assessed by clinical examination and ultrasound abdomen. Basic blood investigations were performed after a detailed history taking and clinical examination.

Treatment modalities used were

- Conservative management using Antibiotics.
- Percutaneous needle aspiration (PNA)
- Percutaneous(Pigtail) catheter drainage (PCD)
- Open surgical drainage

Criteria for conservative treatment only

- All non-complicated abscesses.
- No features of rupture /impeding rupture.
- Volume of the abscess <100cc.
- Symptoms subsided after 72- 96 hours of treatment.

Criteria for ultrasound guided aspiration

- Large abscess having impending rupture/ compression sign.
- Depending on the site. Volume of the abscess 100 - 200cc.
- Multiple abscess both left and right lobe.
- Failure in the improvement on non-invasive treatment after 3 days.

Criteria for percutaneous catheter drainage

- Thick collection not getting aspirated by needle
- Failure of ultrasound guided aspiration
- When there is impending rupture or compression sign present and features of secondary infection.
- 12-14F percutaneous catheter was placed under USG guidance and local anesthesia.

Criteria for laparotomy & drainage

- Abscesses not resolved on antibiotic therapy or minimal invasive therapy.

Ethical committee clearance from the institution was obtained. All the data were collected and statistical analysis done using Microsoft excel data sheet entry SPSS software.

RESULTS

A total of 72 patients were included in this study. Majority of the patients were between the age groups of 31 to 50 years as shown in Figure 1 with a mean age of 42.7 years.

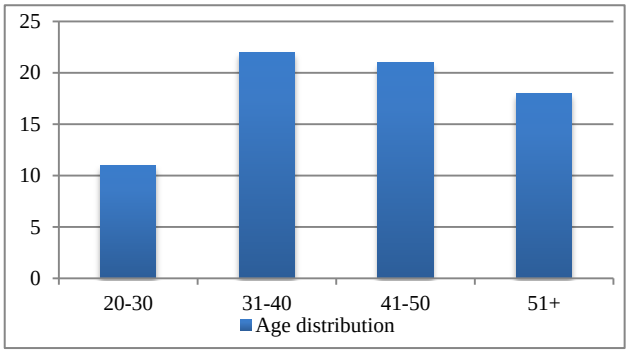

Figure 1: Age distribution.

Males were predominantly affected (77.7% of patients). History of alcohol consumption was present in 55.5% of patients. The most common presenting symptoms were fever in 94% of patients and pain abdomen in 90% of patients. Hepatomegaly was seen in 61% of patients. Majority of abscesses were solitary (725) with predominant right lobe involvement (84%). Bilobar affection was seen in 3% of the patients.

Majority of patients had abscess volume between 100 to 300cc as shown in Figure 2 below. Figure 3 below shows type of management modality planned at admission based on volume and the consistency of the abscess. The Table 1 below shows the success rate of different treatment modalities. Patients who failed with conservative management with antibiotics underwent pigtail catheterization (PCD) (66.6%) and percutaneous needle aspiration (PNA) (33.3%).

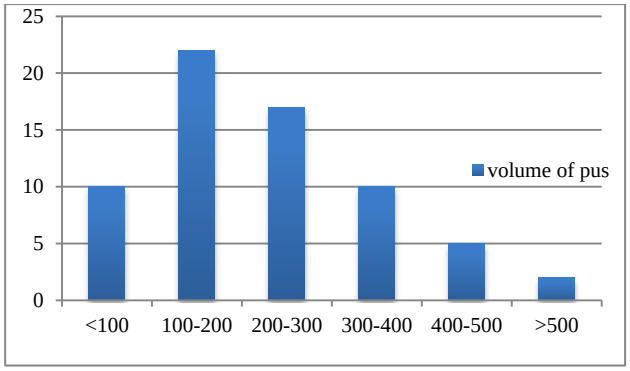

Figure 2: Volume of pus.

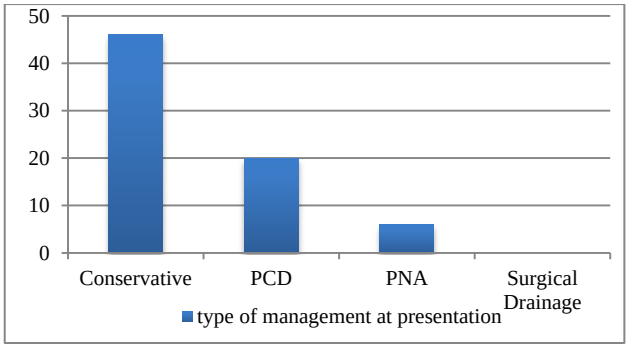

Figure 3: Type of management at presentation.
PCD- Percutaneous drainage, PNA- Percutaneous needle aspiration.

Table 1: Success rate of treatment modalities.

Treatment modality	Conservative number (%)	Pigtail catheterization number (%)	Percutaneous needle aspiration number (%)
Resolved	10 (21.7)	18 (90)	5 (83.3)
Not resolved	36 (78.3)	2 (10)	1 (16.7)
Total	46	20	6

DISCUSSION

Liver abscess a major tropical gastrointestinal disease are life threatening with a high mortality rate if untreated of about 80-90%.[12-14] Recently in the last few years, USG guided procedures have replaced surgical drainage.[15]

In our study, males were commonly affected (77.7%) with a male to female ratio 3.5:1 similar to study by Sukhjeet et al showing male predominance.[16] The mean age in this study was 42.7 years comparable to other studies by Tarcoveanu et al and Amin et al.[17,18] The male predominance may be attributed to lower socioeconomic status, food habits and alcohol consumption in our study.

The common clinical presentations were fever (94%), pain abdomen (90%) and hepatomegaly (61%) similar to other studies.[19-21]

In the study conducted at our centre, 85% of the abscesses were located in the right lobe of liver, 13% were located in the left lobe and 3% were present in both the lobes of the liver, similar to studies done by Singh et al and Rehmanet al.[16,22]

72% of patients in our study had solitary abscesses where as 28% of the patients presented with multiple abscesses as supported by a study of Singh et al which stated 77% of solitary abscess and had encountered 23% of the multiloculated abscess, Rehman et al reports 76% of single abscesses and 24% of multiple abscesses in his study.[16,22] Conservative treatment with antibiotics was done in 46 patients out of which, in 10 patients abscess resolved.

In our study 83.3% of patients undergoing percutaneous needle aspiration showed abscess resolution similar to a study by Giorgia et al showing resolution in 98% of patients.[2] In a study by Singh et al, out of 30 patients 23 patients showed successful resolution.[16,23] Rajak et al reported a success rate of 60% with percutaneous needle aspiration. The success rate of PNA ranges from 79-100%.[24,25]

Ultrasound guided percutaneous needle aspiration has got some advantage over pigtail catheterization in terms being minimal invasive, less expensive, no menace of drain care. In our study we found the success rate of percutaneous needle aspiration being 83% where as success rate of pigtail catheterization was 95% in comparison with study of Singh et al where it was 77% and 100% respectively.[16] The cause for failure of PNA could be need for repeated aspirations in case of large abscesses, thick viscous pus and rapid re-accumulation of pus.[25]

In our study 90%of the patients with pigtail catheterization showed resolution similar to many previous studies.[23,24,26,27] The reason for failure in 10% of patients may be due to thick pus or early catheter removal. In our study, both the modalities PNA and PCD showed minimal complication with 0% mortality. Only two patients underwent open drainage who worsened on the treatment planned at admission. Hence it is shown that open drainage is reserved for patients who have poor minimally invasive procedure response.

Percutaneous needle aspiration and pigtail catheterization are more efficacious than conservative therapy in the management of liver abscess.

Limitations

All types of liver abscess were included in the study making it difficult to understand the response of treatment modality based on etiology. Longer follow up might have given the better insight about the modalities of treatment.

CONCLUSION

Image guided modalities of treatment (PNA and PCD) have decreased the need for surgical procedures which are associated with higher rate of morbidity and mortality. These procedures have also decreased the complications of liver abscess like rupture, sepsis and are also cost-effective.

ACKNOWLEDGEMENTS

Authors would like to thanks Professor Dr. Srinivasan N. for his encouragement and guidance throughout the study. I would like to thank Dr. R. Lakshmi Visruja for her help and extraordinary support in this study process.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Huang C-J, Pitt HA, Lipsett PA, Osterman FA Jr, Lillemoe KD, Cameron JL et al. Pyogenic hepatic abscess. Ann Surg. 1996;223(5):600–9.
2. Giorgio A, Tarantino L, Mariniello N, Francica G, Scala E, Amoroso. P et al. Pyogenic liver abscess: 13 years of experience in percutaneous needle aspiration with US guidance. Radiol. 1995;195:122–4.
3. Kurland, J, Brann, O. Pyogenic and amebic liver abscesses. Current Gastroenterology Reports. 2004;6(4):273-9.
4. Peralta, R. Primary Pyogenic Liver Abscess: Current Treatment Options. Internet J Surg. 2009;18(1).
2. Berger LA, Osborne DR. Treatment of pyogenic abscesses by percutaneous drainage. Lancet. 1982;1:132–4.
3. Gerzof SG, Johnson WC, Robbins AH, Nabseth DC. Intrahepatic pyogenic abscesses: treatment by percutaneous drainage. Am J Surg. 1985;149:487–94.
4. Attar B, Levendoglu H, Cuasay NS. CT-guided percutaneous aspiration and catheter drainage of pyogenic liver abscesses. Am J Gastroenterol. 1986;81:550–5.
5. Seeto RK, Rockey DC. Pyogenic liver abscess. Changes in etiology, management, and outcome. Medicine (Baltimore). 1996;75:99–113.
6. Rintoul R, O'Riordain MG, Laurenson IF, Crosbie JL, Allan PL, Garden OJ. Changing management of pyogenic liver abscess. Br J Surg. 1996;83:1215–8.
7. Ch Yu S, Hg Lo R, Kan PS, Metreweli C. Pyogenic liver abscess: treatment with needle aspiration. Clin Radiol. 1997;52:912–6.
8. Rajak CL, Gupta S, Jain S, Chawla Y, Gulati M, Suri S. Percutaneous treatment of liver abscesses: needle aspiration versus catheter drainage. Am J Roentgenol. 1998;179:1035–9.
9. Cook GC. Gastroenterological emergencies in the tropics. Baillieres Clin Gastroenterol. 1991;5:861–86.
10. Reeder MM. Tropical diseases of the liver and bile ducts. Semin Roentgenol. 1975;10:229–43.
11. Chou, F., Sheen-Chen, S., Chen, Y. and Chen, M. Single and Multiple Pyogenic Liver Abscesses: Clinical Course, Etiology, and Results of Treatment. World J Surg. 1997:21(4); 384-9.
12. Saini, S. Imaging of the Hepatobiliary Tract. New England J Med. 1997:336(26);1889-94.
13. Singh S, Chaudhary P, Saxena N, Khandelwal S, Poddar DD, Biswal UC. Treatment of liver abscess: prospective randomized comparison of catheter drainage and needle aspiration. Ann Gastroenterol. 2013;26:332-9.
14. Târcoveanu E, Vlad N, Moldovanu R, Georgescu St, Bradea C, Lupaşu C, et al. Pyogenic liver abscesses. Chirurgia (Bucur). 2008;103(4):417-27.
15. Amin AB, Patel RD, Doshi C, Bhuva AV. A comparative study of different modalities of treatment of liver abscess. IAIM. 2015;2(4):11-6.
16. Hughes MA, Petri WA., Jr Amebic liver abscess. Infect Dis Clin North Am. 2000;14:565–82.
17. Chiu CT, Lin DY, Wu CS, Chang-Chien CS, Sheen IS, Liaw YF. A clinical study on pyogenic liver abscess. Taiwan Yi Xue Hui Za Zhi. 1987;86:405–12.
18. Barnes PF, De Cock KM, Reynolds TN, Ralls PW. A comparison of amebic and pyogenic abscess of the liver. Medicine (Baltimore). 1987;66:472–83.
19. Rehman M, Aashish K, Anil .B. K. Clinical & Pathological Study of Management of Liver Abscess by Continuous Percutaneous Drainage Using Malecot's Catheter. J Medic Dental Sci Res. 2016;3(9):13-7.
20. Rajak CL, Gupta S, Jain S, Chawla Y, Gulati M, Suri S. Percutaneous treatment of liver abscesses: needle aspiration versus catheter drainage. AJR. 1998;170:1035–9.
21. Baek SY, Lee MG, Cho KS, Lee SC, Sung KB, Auh YH. Therapeutic percutaneous aspiration of hepatic abscesses: effectiveness in 25 patients. AJR. 1993;160:799–802.
22. Dietrick RB. Experience with liver abscess. Am J Surg. 1984;147:288–91.
23. Saraswat VA, Agarwal DK, Baijal SS. Percutaneous catheter drainage of amoebic liver abscess. Clin Radiol. 1992;45:187–9.

24. Gupta SS, Singh O, Sabharwal G, Hastir A. Catheter drainage versus needle aspiration in management of large (>10 cm diameter) amoebic liver abscesses. ANZ J Surg. 2011;81:547–51.

Cite this article as: Reddy P, Ashwin K, Srinivasan N, Halbhavi MR. A study of treatment outcomes of liver abscess in a rural tertiary care centre. Int Surg J 2019;6:2439-43.