



A STUDY BETWEEN PERCUTANEOUS ASPIRATION AND PIGTAIL DRAINAGE IN 70 CASES OF LIVER ABSCESS

General Surgery

Dr. Sameer G Parikh

Associate Professor, Department of General Surgery, Nhl Municipal Medical College And Svp Hospital, Ahmedabad- 380006.

Dr. Rohan D Chaudhari*

R2, Department of General Surgery, Nhl Municipal Medical College And Svp Hospital, Ahmedabad- 380006. *Corresponding Author

Dr. Akash P Oza

R2, Department of General Surgery, Nhl Municipal Medical College And Svp Hospital, Ahmedabad- 380006.

ABSTRACT

INTRODUCTION: Liver abscess, both amoebic and pyogenic, continue to be an important cause of morbidity and mortality in tropical countries. India has the 2nd most burden of liver abscess amongst all the other countries. The advances in radiology like ultrasonography (USG) and CT-scan resulted in introduction of radiological guided aspiration and drainage of intra-abdominal abscesses as many cases are refractory to medical therapy.

AIMS AND OBJECTIVES: To evaluate: demographic profile, etiology, clinical presentation and its management.

MATERIALS AND METHODS:

Study size and period: 70 cases, March 2021 – 2022

Study conducted at: S.V.P HOSPITAL, Ahmedabad

Needle aspiration Guidelines: abscess size >5cm or >65cc volume

Pig Tail Catheter drainage Guidelines: abscess size >8 cm or >120cc volume.

USG done: on Day 1,3,7,30.

Patients above 18 years and willing for long follow-up were included in study. Regular follow up with USG on every visit of the patient was done.

RESULTS: The mean hospital stay of Percutaneous aspiration (2.8 days) was less as compared to pigtail drainage (4.6 days) and hence the patient compliance is more in aspiration. But for the complete resolution of abscess cavity especially for large abscesses pigtail drainage offers better advantage than percutaneous needle aspiration provided the cavity is adequately liquified.

CONCLUSION: Percutaneous needle aspiration is minimally invasive and readily acceptable but not useful in large abscess. And pigtail catheter drainage of abscess under USG guidance is better, safe and effective in larger abscesses but required longer hospital stay. As there is no significant difference in cavity resolution rate, Both Procedures could be used with equal efficacy in properly selected cases.

KEYWORDS

Liver, Abscess, Percutaneous Aspiration, Pigtail Drainage

INTRODUCTION:

-Liver abscesses, both amoebic and pyogenic, continue to be an important cause of morbidity and mortality in tropical countries including India.

- The advances in radiology, resulted in introduction of radiological guided aspiration and drainage of intra-abdominal abscesses.
- The primary mode of treatment of amoebic abscess is medical, but refractory cases and in patient with pyogenic liver abscesses, aspiration and/or PIGTAIL drainage have been the traditional mode of treatment.
- Success rate of needle aspiration is 60-100% and with pigtail catheter it is 100%. Above studies have prompted us to study the subject. [1]

MATERIALS AND METHODS :-

- Study size and period: 70 cases, March 2021-2022
- Study conducted at: S.V.P Hospital, Ahmedabad.
- Needle aspiration Guidelines:- Abscess size >5 cm or >65 cc volume.
- Pig Tail Catheter drainage Guidelines: Abscess size >8 cm or >120 cc volume.
- Patient had ultrasonography(USG) done at the time of admission and treatment procedure to be followed was decided based on USG findings.

PROCEDURES :-

- All patients were started with Inj. ceftriaxone 1 gm IV 12 hourly and inj. Metronidazole 1000 mg IV 8 hourly
- USG done on day 1 (on day of admission), 3,7,15,30 and when required
- Patient above 18 years and willing for long follow-up were included in study. Regular follow up with USG on every visit of patient was done. Patients were examined daily for clinical improvement, laboratory and radiological workup was done as required during admission and then after discharge in follow up OPD visits.

- Cure was defined as improvement clinically with subsidence of fever, and local signs, symptoms, decrease in WBC count and follow up USG showed reduction in size <3 cm in diameter and no evidence of relapses.
- Pigtail catheter was removed when on follow-up USG of the patient, residual liver abscess was found less than 5cm and non liquified in a symptomless patient.

OBSERVATIONS:

1. Gender distribution of cases included in the study.



Fig.1

- Male-52 (74.2%)
- Female-18(25.8%)

2. Age distribution of the cases.

- Age of the patients included in this study varied from 18 years onwards.
- The highest incidence was noted in the age group of 40-50 years (30%)
- With mean age 46.08 years which coincides with findings in others studies.

Table-1

Study	Age group	Mean age
Rajak et al [1]	2-72 yr	35
Antonio Giorgio et al [42]	16-86 yr	45
Present study	21-80 yr	46.08

Symptoms associated with liver abscess:**Table-2**

Symptoms	No of patients	Percentage
Abdominal Pain	70	100%
Fever	62	88.5%
Nausea	48	68.57%
Vomiting	34	48.57%
Jaundice	16	22.85%
Diarrhoea	28	40%

Table-3

Signs on examination	Frequency (n=70)	Percentage (%)
Pyrexia	53	75%
Tachypnoea	49	69.8%
Icterus	20	28%
Tenderness in RHC	61	87%
Hepatomegaly	22	31%

Signs on clinical examination:**5. Laboratory investigations**

- Anaemia (Hb <10 gm/dl) was found in 31.4% (22 patients) of the cases.
- Leucocytosis (>10,000/mm³) was found in 88.5% (62) of cases.
- Hyperbilirubinemia with serum total bilirubin > 1.2 gm/dl was found in 57.2% (40 patients) of the cases in this study. Elevated bilirubin was found in more no. of patients in our study which can be clinically correlated to the no of patients having jaundice.
- The liver function test which was most consistently raised in 61.5% (43 patients) of the cases in this study.
- Elevated prothrombin time was seen in 30% (21 patients) of cases. S.urea was raised in 61.5 % while S creatinine was altered in 32.9% of the cases.

6. Radiological Investigations: Findings in chest X-ray (CXR):**Table-4**

Findings on CXR	Frequency (n=70)	Percentage (%)
CP angle blunting (Unilateral – R)	18	25.7%
CP angle blunting (Bilateral – R+L)	5	7.1%
Elevation of right dome of diaphragm	51	72.8%

Findings on Ultrasonography (USG):

- Majority of patients (67.1%) has single abscess while only a small amount of patients (5.7%) were found having more than 3 abscess cavities.
- Similarly, 64.2% of the patients were found having abscess cavity size ranging from 5-8cm with only 7.3 % abscess exceeding 10 cm in size.
- 58 patients (82.8%) had abscess over the right lobe of liver whereas 9 (12.8%) patients had over the left lobe and 3 patients (4.4%) had abscess on bilateral lobes. 1, 6, 10.

7. Percutaneous needle aspiration (n=50):

- 50 underwent percutaneous aspiration with 16 G spinal metallic needle.

The volume of pus aspirated from the respective segments, residual volume, total number of aspirations and follow-up USG after 15 days were noted along with the mean interval of stay of admission.

Table-5

c	Frequency (n1=50)
<50	9
50-150	29
>150	12
TOTAL	50

- In the present study we can observe that 29/50 patients had volume aspirated between range of 50-150 cc, which correlates to the high number of patients with residual size of liver abscess <5 cm (38/50) after single aspiration.

Table-6

Residual Volume (size)	Frequency
<5cm	38
5-8cm	12
>8cm	0
TOTAL	50

- After single aspiration patients with residual size > 5 cm were kept on antibiotic management and on liquification re-aspiration was done as and when required.
- The 17 patients had to undergo aspiration twice or thrice and 1 patient out of 50 had undergone aspiration 4 times.
- The average duration of stay in patients of percutaneous needle aspiration is 2.8 days.

8. Percutaneous pigtail catheterization (n2=20).

- On insertion of pigtail catheter in a patient of liver abscess the daily output is monitored every 24 hourly and the character of pus is noted.
- Follow-up USG of the abscess is done to confirm the position of the catheter and re-positioned if required and residual size noted after 1 week.

Table-7

Pigtail output/24 hour	<50	50-100	>100
Day 1	2	15	3
Day 2	6	13	1
Day 3	10	9	1
Day 4	13	6	1
Day 5	17	3	0

Table-8

Residual Volume (size)	Frequency (n2=20)
<5cm	14
5-8cm	6
>8cm	0
TOTAL	20

- The frequency of daily catheter output is as follows:
- The average duration of stay in patients of percutaneous pigtail catheterization is 4.6 days.

9. Etiology

- Most of the culture reports show no growth (46%) followed by Escherichia coli being the most common cultured organism at 32%.
- Based on the aspiration and culture reports 60% were diagnosed to be Pyogenic liver abscess, anchovy sauce aspirate along with history of diarrhoea showed 24% of cases to be Amoebic liver abscess.
- Mortality rate in our study cannot be commented much upon due to limited amount of cases.

CONCLUSION:

- Advances of interventional radiology have influenced management of liver abscess.
- In cases of liver abscess, percutaneous needle aspiration under USG guidance is minimally invasive and readily acceptable to most of the patients and easy to perform without any complications.
- Less medical or nursing care is required which shorten hospital stay, negligible morbidity and no mortality. Only disadvantage is in very large abscesses (>8 cm). Repeated aspirations are required and in cases of thick and loculated collections it may fail. Though it can be used as an initial line of management.
- Pigtail catheter drainage of abscess under USG guidance is better in large abscesses which are partially liquified and thick pus. It is safe, effective and minimally invasive procedure with less morbidity and no mortality. The disadvantage is that, the patient has longer duration of hospital stay. This technique also requires expertise and is costlier than percutaneous aspiration.
- There is no significant difference in cavity resolution rates, so both procedures could be used with equal efficacy in properly selected cases.

REFERENCES:

- Rajak, C.L., et al., Percutaneous treatment of liver abscesses: needle aspiration versus catheter drainage. AJR Am J Roentgenol, 1998, 170(4): p. 1035-9. Percutaneous treatment of liver abscesses: needle aspiration versus catheter drainage - PubMed (nih.gov)
- OP KAPOOR D. ed. Amoebic Liver Abscess. 4 ed. Vol. 39. 1999, SS Publishers Bombay. Amoebic Liver Abscess by Dr. O.P. Kapoor (bhj.org.in)
- Zinner MJ, A.S., Maingot's Abdominal Operation. 11th edition ed. Hepatic abscess and cystic disease of liver, ed. P.H. Christians CK. Vol. 2nd: McGraw Hill
- Ochsner A, DM, Murray S Pyogenic abscess of liver. An analysis of 47 cases with a review of literature. Am J Surg, 1938.
- Me, FA, KP. Chang, and C.C. Wong, Solitary pyogenic abscess of the liver treated by closed aspiration and antibiotics, a report of 14 Consecutive cases with recovery. Br J

- Surg, 1953, 41(166): p. 141-52.
6. Yoo, H.M., et al., The changing patterns of liver abscess during the past 20 years-a study of 482 cases. *Yonsei Med J*, 1993. 34(4): p. 340-51.
 7. Courtney M. Townsend, J., R.Daniel beauchamp, B.Mark Evers, Kenneth I. Mottox, Sabiston Text Book of Surgery. 18th ed. Vol. 2. 2004: Elsevier.
 8. Charles F. Brunicaudi, D.K.A., Thimothy R. Billiar, Schwartz Principles of Surgery. 8th edition. 2005: McGrawhill.
 9. TH Glumgart, P.I.M., ThomasP G, TH Glumgart, Surgery of Liver and biliary tract, ,Vol. 2. 1974: Churchill livingstone.
 10. Mangukiya, D., et al., A Prospective Series Case Study of Pyogenic Liver Abscess:Recent Trands in Etiology and Management. *Indian Journal of Surgery*. 74(5): p.385-390.
 11. Hanna, R.M., et al., Percutaneous catheter drainage in drug-resistant amoebic liver abscess. *Trop Med Int Health*, 2000. 5(8): p. 578-81.
 12. Yeoh, K.G., et al., Tropical liver abscess. *Postgrad Med J*, 1997. 73(856): p. 89-92.
 13. al, P.L.e., Oxford Textbook of Surgery. Abscesses Pyogenic and Amoebic. Vol. 1. 1994.
 14. Sharma, M.P., et al., Long term follow-up of amebic liver abscess: clinical and ultrasound patterns of resolution. *Trop Gastroenterol*, 1995. 16(3): p. 24-28.
 15. Giorgio,a.,et al.,pyogenic liver abscesses:13 yrs of experience in percutaneous needle aspiration with us guidance 1995.195(1)p122-4 Conflict of interest: NIL