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Original Research Article

Comparison between supra-cath and pigtail in drainage of liver abscess

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ABSTRACT

Background: A majority of patients with liver abscess respond rapidly to treatment with drugs but the remaining specially with complications will eventually require either percutaneous aspiration or percutaneous drainage for their resolution. For this, Ryle's tubes and Pigtail catheters have been used for percutaneous drainage of abscess. Supra-Cath is the latest variety of catheter which can be used for this purpose. Our study compares supracath and pigtail application for management.
Methods: We conducted a prospective randomized comparative study in the departments of Surgery and Radiology, UPUMS Saifai, Etawah, Uttar Pradesh. A rural tertiary care centre in total of 60 patients from August 2016 to April 2017.
Results: Average age in PCD and SCD were 38 and 42 respectably. Male:female ratio was 23:7 in PCD group and 21:9 in SCD group. Average size of abscess was 6.7 cm in PCD group and 6.9 in SCD group. Amoebic liver abscess was 18 in PCD and 22 in SCD group. Pyogenic abscess was 12 in PCD and 8 in SCD group. Average time for removal of PCD was 9.7 days and 8.6 in SCD group. In follow, up six patient had residual abscess in PCD group and two in SCD group at one month interval and all resolved with conservative treatment.
Conclusions: Supra-Cath is very useful catheter for effective and safe drainage of large liver abscess and can be used as an alternative to pigtail catheter if not available.

Keywords: Liver abscess, Pigtail, Supracath

INTRODUCTION

Abscess of the liver has been described since the time of Hippocrates (400 BCE), with the first published review by Bright appearing in 1936. In 1938, Ochsner's classic review heralded surgical drainage as the definitive therapy; however, despite the more aggressive approach to treatment, the mortality remained at 60-80%.[1] With the development of new radiologic techniques, the improvement in microbiologic identification, and the advancement of drainage techniques, as well as improved supportive care, have reduced mortality to 5-30%; yet, the prevalence of liver abscess has remained relatively unchanged. Untreated, this infection remains uniformly fatal.

The three major forms of liver abscess, classified by etiology, are as follows

- Pyogenic abscess, which is most often polymicrobial, accounts for 80% of hepatic abscess cases in the United States
- Amebic abscess due to Entamoeba histolytica accounts for 10% of cases
- Fungal abscess, most often due to Candida species, accounts for fewer than 10% of cases.

A majority of patients with liver abscess respond rapidly to treatment with drugs but the remaining specially with complications will eventually require either percutaneous aspiration or percutaneous drainage for their resolution. For this, Ryle's tubes and Pigtail catheters have been used for percutaneous drainage of abscess. Supra-Cath is the latest variety of catheter which can be used for this purpose.

The objective of this study was to compare placement of supracath versus pigtail in liver abscess.

METHODS

We conducted a prospective randomized comparative study in the departments of Surgery and Radiology, UPUMS Saifai, Etawah, Uttar Pradesh a rural tertiary care centre. A total of 60 patients were included in the study, randomized into two groups; supracath drainage (SCD) (n=30) and pigtail catheter drainage (PCD) (n=30). The patients were studied from August 2016 to April 2017.

Inclusion criteria

All patients of liver abscess between the age group of 18 to 60 years were included in the study which were under criterion for per cutaneous drainage. All the patients diagnosed to have liver abscess clinically and radiologically [on ultrasonography (USG) were included in the study.

Exclusion criteria

All abscess cavities smaller than 5 cm in their greatest dimension; multiple abscess, prior intervention; ruptured liver abscess; uncertain diagnosis; concomitant biliary tract malignancy; uncorrectable coagulopathy and left liver abscess.

After satisfying the inclusion criteria we carefully worked up in terms of a detailed history and clinical examination. Lab and imaging investigations included complete hemogram; liver function tests; prothrombin time; international normalized ratio; activated partial thromboplastin time; imaging-CXR; abdominal USG and other investigations as per specific indications in different patients.

An informed consent was obtained from the participating patients and all the consenting patients were started on medical treatment on inj ceftriaxone 1gm iv BD, inj metrogyl 200ml iv TDS, inj amikacin 500 mg iv BD. The empirical treatment was revised based on the pus culture and sensitivity report. However, patients in whom pus culture was sterile continued on the same treatment. The antibiotics and metronidazole were given for duration of 10 and 14 days respectively.

Both procedures were carried out under local anesthesia (2% lignocaine) with IV analgesia. The procedures were carried out under continuous real-time USG guidance. Using a no. 11 blade, a small stab was made on the anesthetized skin. A percutaneous pigtail catheter (12 fr) set and supracath (14fr) was used for drainage using Seldinger technique. The catheter was attached to a collecting bag via the supplied connector.

In both groups, besides recording temperature, total leucocyte counts, LFT of the patient every day, daily output of the catheter was measured. A decision to remove the pigtail catheter was made when the total drainage from the catheter decreased to less than 10 mL/24 hours for two consecutive days.

The patients were followed up weekly for a month for clinical evaluation and USG assessment of abscess cavity until complete resolution of the abscesses was achieved. Data was collected and recorded.

RESULTS

Average age in pigtail catheter group was 38 years and average age in supracth group 42 years. Male:female ratio was 23:7 in PCD group and 21:9 in SCD group. Incidence of liver abscess was more in male and less in females and it was statistically significant. Incidence of pyogenic abscess was less, out of 60 patients only 20 patient had pyogenic abscess and 40 patients had amoebic liver abscess. Out of these 40 patients of amoebic liver abscess 13 were females and 27 were males.

Table 1:

	PCD (30 patients)	SCD (30 patients)
Average age	38 years	42 years
Male / female ratio	23:7	21:9
Average size of abscess	6.7 cm	6.9cm
Diagnosis of amoebic abscess	18 patients	22 patients
Diagnosis of pyogenic abscess	12 patients	8 patients
Average time of removal of catheter	9.7 days	8.6 days
Residual abscess in follow up at one month	6 patients	2 patients

(PCD- Pigtail catheter group, SCD- supra-cath group).

Out of these 40 patients of amoebic liver abscess 29 were of low socioeconomic status or below poverty line. 13 female patients of amoebic liver abscess none had history of alcohol. Out of 27 male amoebic liver abscess 23 had history of alcohol. Out of 20 patients of pyogenic abscess only 3 were female's other 17 were males. Incidence of pyogenic abscess was more in males. Out of these 17 male patients of pyogenic abscess 13 patients had history of alcohol. No female patients of pyogenic liver abscess had history of alcohol. All alcoholic patients were consuming local country made low quality liquor. Of 20

pyogenic liver abscess patients only 3 patients were of low socioeconomic status or below poverty line all other were lower middle-income group. Average size of abscess was 6.7 cm in PCD group and 6.9 in SCD group. There was no significant difference in size of abscess in male or female patients. Amoebic liver abscess was 18 in PCD and 22 in SCD group. Pyogenic abscess was 12 in PCD and 8 in SCD group. Average time for removal of PCD was 9.7 days and 8.6 in SCD group. There was no significant difference in outcome of patients in male or female patients. In follow, up six patient had residual abscess in PCD group and two in SCD group at one month interval and all resolved with conservative treatment.

DISCUSSION

Liver abscess is found more commonly in men between 20 and 40 years of age, but can occur at any age. Approximately 60% are solitary and mainly located in the right lobe of the liver, as a result of the streaming of portal blood flow secondary to the fact that the right lobe is predominantly supplied by the superior mesenteric vein, and because most of the hepatic volume is in the right lobe. When multiple abscesses are present, pyogenic or mixed is the most probable type. Patients usually present with a constant dull pain in the right upper quadrant of the abdomen which may be referred to the scapular region or the right shoulder. These patients usually have fever of between 38ºC and 40ºC.

The primary mode of treatment of amebic liver abscess is medical; however, as many as 15% of amebic abscesses may be refractory to medical therapy.[2] Also, secondary bacterial infection may complicate 20% of amebic liver abscesses.[3] In such patients and in patients with pyogenic liver abscesses, surgical drainage has been the traditional mode of treatment.[4] However, operative drainage is associated with significant (10-47%) morbidity and mortality.[5]

A majority of patients with liver abscess respond rapidly to treatment with metronidazole, though a cavity may persist on ultrasonography for a long time3. Conventional indications for percutaneous drainage include deterioration in clinical condition on adequate treatment, bacterial superinfection and a high risk of rupture, whereas surgery is reserved for patients with ruptured abscess. Studies have shown that percutaneous procedure is a safe approach, and it accelerates resolution in large abscesses which are more than 10 cms sized Rajak et al showed that catheter drainage is more effective than needle aspiration in the treatment of ALAs, more than 10 cm sizes at the time of presentation.[6,7]

The most common method of catheter drainage, is drainage by Ryle's tube, which is put into abscess cavity with the help of a trocar and cannula. Besides Ryle's tubes, Pigtail catheters have also been used for drainage of liver abscess.[8] The disadvantages of tube drainage are three-fold. First, putting the tube with trocar and cannula is more traumatic to liver tissue. Second, there is some spillage of pus from cannula when we take out the trocar before catheter insertion. And third, though rare is that these tubes may get kinked or knotted within the cavity leading to improper drainage or non-retrieval of the tube.[9] All these problems of catheter drainage with the help of trocar and cannula can be overcome by the use of supra-cath, meaning by this is less traumatic, there is no spillage during insertion and it can be removed easily when required.

There are very few studies in the literature, which have suggested some role of supra-caths in the treatment of Liver abscess which says that supra cath is an effective alternative to trocar for drainage of deep-seated liver abscess especially in obese or muscular patients with a thick parietal wall.[10]

CONCLUSION

There is no difference in using pig tail catheter or supra-cath in drainage of liver abscess. Supra-cath is very useful catheter for effective and safe drainage of large liver abscess and can be used as an alternative to pigtail catheter if not available.

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REFERENCES

1. Ochsner A, DeBakey M. Diagnosis and treatment of amebic abscess of liver: a study based on 4484 collected and personal cases. Am J Dig Dis. 1935;2:47-51.
2. Thompson JE, Forlenza S, Verma R. Amebic liver abscess: a therapeutic approach. Rev Infect Dis.1985;7:171-9.
3. Sherlock S, Dooley J. 9th ed. Oxford: Blackwell Sci Pub; Diseases of the liver and billiary system; 1993:471-502.
4. Theron P. Surgical aspects of amoebiasis. Br Med J. 1947;2:123-6.
5. Satiani B, Davidson ED. Hepatic abscesses: improvement in mortality with early diagnosis and treatment. Am J Surg. 1978;135:647-50.
6. Zafar A, Ahmed S. Amebic liver abscess: a comparative study of needle aspiration versus conservative treatment. J Ayub Med Coll Abbotabad. 2002;14:10-2.
7. Rajak CL, Gupta S, Jain S, Chawla Y, Gulati M, Suri S. Percutaneous treatment of liver abscess: needle aspiration versus catheter drainage. Am J Roentgenol. 1998;170:1035-9.
8. Gall JK, Vincent AL, Green JN, Sandin RL, Sniffen JC. Amebic liver abscess. Infact Med. 2001;18:548-53.

9. Godara R, Dalal S, Garg P, Nityasha, Jain A. Retained percutaneous tube - a misery of illiteracy. Asian J Surg. 2007;11(2):141-2.
10. Singh RB, Bakshi N, Pavithran NM. Drainage of deep seated amoebic liver abscess by Supra-Cath. Trop Doct. 2003;33(4):247-8.

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