A COMPARATIVE STUDY OF PERCUTANEOUS CATHETER DRAINAGE VERSUS PERCUTANEOUS ASPIRATION IN THE TREATMENT OF LIVER ABSCESS: A RETROSPECTIVE STUDY

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ABSTRACT

BACKGROUND AND OBJECTIVES

The incidence of liver abscess both Pyogenic and Amoebic liver abscess is steadily increasing. Liver abscess is a treatable condition and without treatment the mortality of the liver abscess is very high. The objective of the study is to compare and correlate the therapeutic effectiveness of percutaneous needle aspiration and percutaneous catheter drainage in the treatment of liver abscess and to indicate the various determinants that affect the success of both the procedures.

METHOD

Study was conducted on 60 patients suffering from liver abscess, who were admitted in SVMCH and RC, Pondicherry, between 1st August 2014 and 1st December 2015. Patients admitted with liver abscess who satisfied the inclusion and exclusion criteria were included in the study. USG was used to identify associated abdominal pathology. Patients were randomly allocated into two groups, one group treated with percutaneous needle aspiration, the other treated with percutaneous catheter drainage and both the groups were compared.

RESULTS

Out of 60 patients studied, 56 (93.3%) were males, 4 (6.7%) patients were females. Highest number of patients, 18 cases (30%) found in the age group of 31-40. E. coli is the commonest organism isolated from pyogenic liver abscess. Only in 4 (6.7%) cases, E. histolytica isolated from amoebic liver abscess. Out of 60 patients studied, 30 (50%) patients treated with percutaneous needle aspiration, 30 (50%) cases treated with percutaneous catheter drainage. Among the complication, 10 patients (16.7%) had pleural effusion, 1 patient (1.7%) had abscess ruptured into peritoneal cavity, 1 patient (1.7%) had abscess ruptured into the lung, 3 patients (5.0%) had both peritoneal rupture and pleural effusion and 1 patient (1.7%) had abscess ruptured into lung and pleural effusion. In our study 56 (93.3%) cases treated successfully, 4 patients (6.7%) had recurrence.

INTERPRETATION AND CONCLUSION

Liver abscess is a common surgical problem. Liver abscess can be treated successfully with both percutaneous needle aspiration and percutaneous catheter drainage. Percutaneous needle aspiration is a simple procedure with minimal complication, whereas percutaneous catheter drainage avoids the need for repeated aspiration, avoids the need for more no. of repeat ultrasounds, reduces the hospital stay marginally and thereby proving cost effective when compared to percutaneous needle aspiration. Pleural effusion was the commonest complication encountered in both the groups.

KEYWORDS

USG; Percutaneous Needle Aspiration; Percutaneous Catheter Drainage.

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INTRODUCTION

Liver abscess both amoebic and pyogenic continue to be an important cause of morbidity and mortality in tropical countries. Over the ages, there has been significant decrease in its mortality. The primary mode of treatment of liver abscess is medical. In complicated amoebic abscess and pyogenic liver abscess, traditional mode of management has been surgical drainage.¹

There have been varied changes in the treatment modality of choice from the traditional open surgery to the minimally invasive percutaneous drainage. However, whether this has lowered the mortality rate is debatable.²

The treatment of choice remains controversial. The modality of treatment options ranges from sole medical therapy to the more complex liver resection.²

The mainstay of treatment of liver abscess in the recent past has been either a percutaneous catheter drainage or percutaneous needle aspiration. Various studies done in the recent past have not been conclusive, as to which of the two is better in the treatment of liver abscess.³

Hence, the purpose of this study is to compare the above mentioned treatment modalities and identify the better option for treating patients suffering from liver abscess in our setup.

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AIM

To compare and correlate the therapeutic effectiveness of percutaneous catheter drainage versus percutaneous needle aspiration in the treatment of liver abscess.

OBJECTIVES

1. To identify and compare the advantage, morbidity and side effects associated with percutaneous catheter drainage and percutaneous needle aspiration.
2. To compare the cost effectiveness of both the treatment options.

REVIEW OF LITERATURE

In 2011, Gupta SS, Singh O, et al. did a comparative study of catheter drainage versus needle aspiration in managing liver abscess and concluded that "PCD is a better treatment option than PNA for the management of large (>10cm diameter) liver abscess, in terms of duration to attain clinical relief and duration for which parenteral antibiotics were needed."⁴

In recent years, imaging guided percutaneous drainage has been increasingly used to treat liver abscess with reported success rates ranging from 70-100%. Although, percutaneous placement of an indwelling catheter is the method most widely preferred to drain liver abscesses, recent studies have shown therapeutic needle aspiration to be a simpler, less costly and equally effective mode of treatment.^{5,6,7,8,9,10}

In 2007, Enver Zerem I and Amir Hadzic et al. did the same comparative study and concluded that "Percutaneous Drainage is more effective than percutaneous needle aspiration in the management of liver abscess. Percutaneous needle aspiration can be used as a valid alternative for simple abscesses 50mm in diameter or smaller."³

In 2004, Yu et al. did a comparative study of the two mentioned treatment modalities of liver abscesses and concluded that "Intermittent needle aspiration is probably as effective as continuous catheter drainage for the treatment of liver abscess. Due to additional advantages of procedure simplicity, patient comfort and reduced price, needle aspiration should be considered as a first line treatment approach in cases of liver abscesses."²

In 1998, Rajak et al. did a comparative study of the above mentioned parameters and concluded that "Percutaneous catheter drainage is more effective than needle aspiration in the treatment of liver abscesses. Needle aspiration, if limited to two attempts, has a high failure rate."¹

MATERIAL AND METHODS

- Place of study: Sri Venkateshwaraa Medical College Hospital and Research Centre, Ariyur, Puducherry.
- Type of study: Comparative Study.
- Period of study: August 2012 to August 2014.
- Period required for data collection: 2 years.
- Period required for data analysis and reporting: 6 months.
- Sample size 60 cases.
- Informed and written approval will be taken.
- Institutional ethical committee clearance will be taken.
- Equipments:-
- 16/18 Gauge disposable trocar needle and syringe.
- Trocar with 8-12 French multi-side hole pigtail catheter.
- Collecting Bag.
- Ultrasound Machine- Seimens X-300.
- High Speed Dual Slice CT Scanner by GE.

Inclusion Criteria

All patients clinically and radiologically diagnosed to have liver abscess.

Exclusion Criteria

- Patients with ruptured liver abscess.
- Patients with very small abscess measuring less than 5cm.
- Multiple abscesses.
- Patients below the age of 14.

Technique**Catheter drainage**

The drainage technique will be done with a trocar method with an 8/12-French multiple side hole pigtail catheter introduced into the abscess cavity. The procedure will be performed with local anaesthesia, the patient supine. Careful localization of the abscess and proper selection of the entry site will be required.

The optimal route of access should traverse the least possible amount of liver tissue, bowel and pleura will be avoided. Aspiration will then be performed with the catheter until no more pus is removed.

The catheter will be then secured to the skin for continuous external drainage and will be then left in place attaching its other end to a completely closed collecting system until drainage of pus stops. The residual contents of abscesses will be managed by catheter repositioning and aspiration or by introduction of a new catheter.

NEEDLE ASPIRATION

Pus will be evacuated from an abscess with a 16/18-gauge disposable trocar needle under ultrasound guidance.

Ultrasonography will be performed every 3 days and the size of the abscess cavity will be recorded. If there is no significant reduction in the abscess cavity on control examination, aspiration will be repeated.

Repeated aspiration will be attempted maximum two times for each patient not responding. Lack of response to a third aspiration will be considered failure of treatment.

PROFORMA

Name:	Age:
Sex:	Address:
Occupation:	Reg. No.

Complaints

- 1
- 2
- 3

History

- fever
- abdominal pain
- bowel and bladder complaints

Past History

- history of any previous infections
- alcohol use

General Examination

- temp
- pulse
- BP
- pallor
- icterus

SYSTEMIC EXAMINATION

PER ABDOMINAL EXAMINATION

RESPIRATORY SYSTEM

CARDIOVASCULAR SYSTEM

CENTRAL NERVOUS SYSTEM

INVESTIGATIONS

Lab investigations

Hb

RFT-BUN

TLC

S. creatinine

DLC

ESR

LFT's: S. Bilirubin (Direct+indirect)

ALT

AST

ALP

PT-INR

RADIOLOGICAL INVESTIGATIONS

1. USG-Liver: size, echo texture, nodularity, margin, location, characteristics.
2. CT Abdomen (SOS).

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