



OUTCOME OF ULTRASOUND GUIDED PERCUTANEOUS NEEDLE ASPIRATION OF LIVER ABSCESS

General Surgery

Dr. Pravesh kumar Soni Post Graduate Student.

Dr. Shaurya Sood Post Graduate Student.

Dr. Sunita Malviya M.S General Surgery.

Dr Shoor Singh Sisodiya Assistant Professor .

Dr Ajay Malviya Senior Professor, Surgery, Dr S.N.Medical college, Jodhpur, Rajasthan.

ABSTRACT

Background: Liver abscesses, both amoebic and pyogenic, continue to be an important cause of morbidity and mortality in tropical country. Traditionally for many years they were treated with antimicrobial alone, blind percutaneous aspiration or surgical exploration. This conception gradually changes into usg guided percutaneous aspiration or drainage with development of advanced diagnostic imaging modality. **Aim :** Evaluate the outcome in term of efficacy and safety associated with ultrasound guided percutaneous needle aspiration of liver abscess. **Materials and Methods :** A prospective and retrospective clinical study done in Department of general surgery of Dr. Sampurnanand Medical College, Jodhpur, Rajasthan. In our study 100 patients of liver abscess were included and Study was conducted during the period extending from January 2019 to December 2022. **Results:** A total of 100 patients with liver abscess were successfully treated, consisting of 84 males and 16 females, male female ratio 5.25:1. The age ranges from 18 to 80 years. Majority (88%) had single abscess and 12% had two or more. Most of the abscess are located in the right lobe of liver (72%). Single needle aspiration were needed in 44% of patient, second aspiration were needed in 38% of patients and third aspiration in 18% of patients. Average attempt of aspiration per patient was 1.74. The amount of aspirated pus ranged from 40 to 1170 ml. **Conclusion:** percutaneous needle aspiration with 16G spinal needle is an effective and safe mode of treatment of liver abscess, notresponding to medical line of management and should be the first choice beforeconsidering open surgical drainage.

KEYWORDS

liver abscess, usg guided aspiration

INTRODUCTION

Liver abscesses, both Amoebic and Pyogenic, continue to be an important cause of morbidity and mortality in tropical countries. The advances in radiology like ultrasonography and C T scan since last 30 years including imaging and interventional techniques resulted in introduction of radiological guided aspiration and drainage of intra-abdominal abscesses.

Operative drainage is associated with significant (10 to 47%) mortality and morbidity. In recent years, ultrasound guided aspiration has been increasingly used to treat liver abscess with reported success rates ranging from 70 to 100%, surgical intervention is typically unnecessary. Needle aspiration is the method most widely preferred to drain the liver abscesses. Also few studies have shown therapeutic needle aspiration to be a simpler and less costly mode of treatment, but needs repeated aspiration. Our study consists of 100 cases of liver abscess of different aetiology treated by ultrasound guided needle aspiration using needle of size 16G. This study is conducted to be establish that USG guided needle aspiration of liver abscess is an feasible, better alternative and less invasive procedure for management of liver abscesses than conventional open drainage.

MATERIALS AND METHODS

In the present study, 100 patients of liver abscess were selected from various surgical wards of Mahatma Gandhi and Mathura Das Mathur hospitals attached to Dr Sampurnanand Medical college, Jodhpur. Study was conducted during the period extending from January 2019 to December 2022. With good history, clinical head to toe examination and ultrasound abdomen provisional diagnosis of liver abscess was made. Inclusion and exclusion criteria are quoted below. All patients were hospitalized and started on parenteral amoxycillin and Metronidazole therapy.

Inclusion Criteria

All patients diagnosed with liver abscess of age group of more than 18 year of both genders.

Exclusion Criteria

1. Patients who refused to participate in the study
2. Patients with uncorrected coagulopathies
3. Ruptured liver abscess
4. Abscess volume less than 30 ml

Aspiration procedure will perform under sonographic guidance. The standard USG guided aspiration needle used is 16G spinal needle, local anaesthesia induced with 10 ml of lidocain 2%, than abscess localize, 16G spinal needle inserted, pus aspirated, after aspiration sample send for culture and sensitivity. All procedure done under complete aseptic precaution.

RESULTS

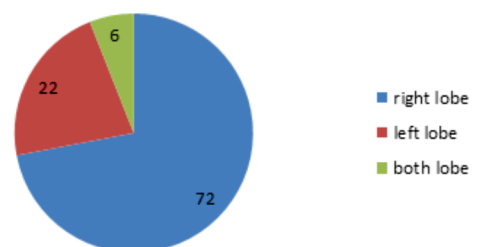
A total of 100 patients with liver abscess were successfully treated, consisting of 84 males and 16 females, male female ratio 5.25:1. The age ranges from 18 to 80 years with highest incidence (52%) was in the age group 31-50 years.

Table 1: Age Incidence

AGE(yrs)	No. of patients	%
18- 20	6	6
21-30	17	17
31-40	23	23
41-50	29	29
51-60	8	8
>61	17	17
TOTAL	100	100

Majority (88%) had single abscess and 12% had two or more. Most of the abscess are located in the right lobe of liver (72%).

Site of abscess



Graph.1- Ultrasonography Showing Site Of Abscess

The common symptoms and signs of liver abscess were fever (77%), right upper quadrant pain and tenderness (90%) and hepatomegaly (29%). Single needle aspiration were needed in 44% of patient, second aspiration were needed in 38% of patients and third aspiration in 18% of patients. Average attempt of aspiration per patient was 1.74. The amount of aspirated pus ranged from 40 to 1170 ml.

Table.2: Number Of Aspiration Attempts

No. of attempts	No. of patients	Mean abscess volume (ml)
FIRST	44 (44%)	141.22+80.87
SECOND	38 (38%)	358.52+134.70
THIRD	18 (18%)	694.55+220.74
Total	100	-

Majority of patients (53%) with mean abscess volume 312.54+156.50 were discharged on 7-14th day of hospital admission after complete resolution of abscess volume. Percutaneous needle aspiration were successful in all of the patients (100%). No major complications were seen. Minor complications included mild pain at the hypochondrium and mild bleeding during needle insertion.

DISCUSSION

Controversies still exist in the management of liver abscess⁽¹⁾. Percutaneous drainage (either needle aspiration or catheter drainage) coupled with systemic antibiotics has become the preferred treatment for the management of pyogenic abscess.^(2,3)

We found percutaneous needle aspiration of liver abscess an easy and effective method of treatment. It has replaced surgical exploration which now has very limited indications. Needle aspiration is less expensive, avoids problems related to catheter care and long term hospital care. Multiple abscesses can be aspirated through different tracts in the same sitting. Our method involved percutaneous needle aspiration of pus from the abscess cavity as much as possible coupled with combined antiamebic and antibiotic treatment. Follow up USG were done at 3 to 4 days interval and if necessary second and third aspiration were done. Peak occurrence of liver abscess in our study was observed in the age group 31-50 year of age which accounted for about 52% patients. G.Salahuddin et al: conducted a case study of 380 patients of liver abscess and maximum cases belongs to age groups 31-50 years⁽⁴⁾. O.Freeman et al.conducted a study of liver abscess in age 21-60 years and found maximum cases in 31-40 year of age group⁽⁵⁾. which was nearly similar to our study.

In our study majority of patients were males (84%) as compared to females(16%) with a male : female ratio 5.25:1. G.Salahuddin et al conducted study of 380 patients out of which 88.9% were male and 11% females with male to female ratio of 8.04:1⁽⁴⁾. O.Freeman et al conducted study of 36 patients out of which 77.7% were male and 22.3% patients were female⁽⁵⁾. with a male: female ratio 3.5:1. Antonio Giorgiolet et al conducted a study of 39 patients out of which 74.3% were male and 25.7% females with male : female ratio was 2.9:1. Above studies correlate well with our study⁽⁶⁾

Most common symptoms of liver abscess in our study were right upper quadrant pain(90%) followed by Fever(77%), Anorexia(41%) and signs were right upper quadrant Tenderness(38%) and Hepatomegaly (29%).According to G.Sallauddin et al 96% patients presented with right upper quadrant pain, 86% with fever and 73% had hepatomegaly⁽⁴⁾.Greenstein et al observed in their study that fever presented in 95% patients, pain abdomen in 84%, abdominal tenderness in 42%, hepatomegaly in 39%.⁽⁷⁾

In our study ultrasonography abdomen revealed that 72% cases had abscess in the right lobe of liver compared to 22%in left lobe while 6% patients were found to have abscesses in both lobes.Khanna S, Chaudhary D, Kumar A, et al reported right lobe abscess in 55.5% cases . Multiple abscesses were associated in 27.7% and isolated left lobe abscess were seen in 16.6% of the patients in their study⁽⁸⁾In our study, 88% cases had a solitary liver abscess. We encountered multiple liver abscesses in 12% of the patients, similar to the 18-25% incidence of multiple liver abscesses.^(9,10)

In our study 29% cases had abscess measuring less than 200ml while 40% had between 200-500 ml.In 31% patients the abscess volume was more than 500ml and the largest measured was 1170ml.The smallest size of abscess encountered was 34 ml.

Single aspiration was sufficient to collapse abscess cavity in 44%

patients with mean abscess volume 141.22+88 ml while 38% patients with mean abscess volume 358.52+134.70 ml required second attempt for the same and 18 % patients with mean abscess volume 694.55+220.74 ml, third attempt of aspiration required for complete resolution of abscess cavity. Average attempt of aspiration per patient was 1.74.According to G Salahuddin et al study single aspiration was required in 30%, second aspiration in 38% and third attempt of in 32% of patients. Average attempt of aspiration per patient was 2.02⁽⁴⁾.

The major advantages of percutaneous needle aspiration are: 1) it is less invasive and less expensive; 2) avoids problems related to catheter care; and 3) multiple abscesses cavities could be aspirated easier in the same setting.⁽¹¹⁾

The success rate of percutaneous needle aspiration in the literature varies from 77-100%.⁽¹²⁾ In our study we treated 100 patients with ultrasonography guided needle aspiration with 16G spinal needle. All were treated with success rate of 100%.

CONCLUSION

So it can be concluded that percutaneous needle aspiration with 16G spinal needle is an effective and safe mode of treatment of liver abscess, not responding to medical line of management and should be the first choice before considering open surgical drainage.

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