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A profile study of 50 cases of liver abcess treated by percutaneous catheter drainage

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ABSTRACT

Background: Liver abscess is a life-threatening disease. Continuous catheter drainage is widely accepted and in combination with antibiotics is considered a safe and effective method of management of liver abscess. The objective of this study was to evaluate predisposing factors and incidence of liver abscess in various age group, sex, social economic study and its comparison with various studies and to evaluate morbidity, mortality and complication rates in patients of liver abscess treated either by percutaneous USG guided catheter drainage.

Methods: This is an observational study of 50 patients with pigtail catheter drainage and needle aspiration in liver abscess treated during the period of May 2011 to December 2013 at New Civil Hospital, Surat.

Results: In the present study majority of case [11 cases (22.5%)] were observed in the age group of 31-40 years. Male female ratio in our study was 8.2:1. Majority of Liver abscess cases [34 cases (68 %)] belongs to low socio-economic class. The commonest symptoms are pain and fever seen in 64% each. In the present study 100% success rate with no recurrence. None of the patients expired in the present study. Median hospital stay is 5 days with range from 2-25 days.

Conclusions: Percutaneous pigtail catheter drainage is more effective in large liver abscess.

Keywords: Liver abscess, Percutaneous catheter drainage, Pigtail catheter

INTRODUCTION

Liver abscess is a life-threatening disease. The classic presentation of fever, right upper quadrant pain and tender hepatomegaly is unusual. The frequency of any particular symptoms varies widely among reports. Management of liver abscess was exclusively surgical in past. Modern treatment has shifted toward IV broad spectrum antibiotics and imaging guided percutaneous needle aspiration or percutaneous catheter drainage. Percutaneous pigtail catheterization reduces chances of exploration by surgery for liver abscess. Surgical intervention is only indicated for ruptured liver abscess, multiple lesions that cannot be effectively managed

percutaneously and abscesses that do not respond to less invasive methods.

The advantage of sonographic over CT guidance is that sonography is a real-time imaging technique that allows monitoring of the course of the needles and catheters as they traverse tissues.²

Continuous catheter drainage is widely accepted and in combination with antibiotics is considered a safe and effective method of management of liver abscess. Some authors prefer repeated needle aspiration, considering it as effective and safe as PCD but easy to perform, less complicated, less risky for post procedure septicemia and

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less expensive. This approach requires careful follow-up and often repeated imaging procedures to monitor response to therapy. The objectives of the present study were to evaluate predisposing factors and incidence of pyogenic and amoebic liver abscess in various age group, sex, social economic study its comparison with international studies, to study patient, presentation and manifestations of liver abscess and its complications and to evaluate morbidity, mortality and complication rates in patients of liver abscess treated either by percutaneous USG guided catheter drainage.

METHODS

This is an observational study of patients with pigtail catheter drainage and needle aspiration in liver abscess treated during the period of May 2011 to December 2013 at New Civil Hospital, Surat.

Inclusion criteria

- Large sized liquefied or partially liquefied liver abscesses (> or = 5 cm diameter)
- Single abscess or with multiple communicating abscesses
- Uniloculated abscess.

Exclusion criteria

- Multiple abscesses and ascites
- A known intra-abdominal source that requires surgery
- Multiloculated or septate abscess.
- Coagulopathy.

In this study, 50 cases of liver abscess were treated either by USG guided pigtail catheter drainage. A patient was randomized for aspiration and pigtail drainage if he or she had symptoms and signs of liver abscess and if liver abscess was confirmed at Sonographic or CT examination. Patients had begun intravenous antibiotic treatment with amikacin 10 mg/kg 12 hourly, ceftriaxone 10 mg/kg iv 12 hourly, and metronidazole 15 mg/kg 8 hourly.

Informed consent was obtained from all participating patients. Fifty patients fitting the inclusion criteria were randomly allocated to two percutaneous intervention groups, for either continuous catheter drainage or intermittent needle aspiration.

Pigtail catheter drainage

In drainage technique, an 8-14 French multiple-sidehole pigtail catheter introduced into the abscess cavity by seldinger technique. The procedure was performed with local anaesthesia with the patient supine or left lateral position. Careful localization of the abscess and proper selection of the entry site were required. The optimal route of access traversed the least possible amount of

liver tissue and avoided bowel and pleura. Aspiration was then performed with the catheter until no more pus could be removed.

A sample of pus was routinely taken and sent for microbiological analysis including microscopy, culture, and antibiotic sensitivity tests. After that irrigation done with normal saline and again pus was aspirated, if no more pus could be drain then catheter was secured to the skin for continuous external drainage and the patient was sent back to the ward. When catheter output had stopped for 24 hours, a follow-up sonography was performed.

Patient follow-up and outcome

Follow up Sonography was repeated every 3 days initially in first week and the weekly for first month and then monthly until the cavity had either disappeared or had shown reduction or stasis in size with clinical recovery.

Criteria for successful treatment were clinical subsidence of infection and sonographic evidence of abscess resolution, such as disappearance or marked decrease in the abscess cavity (more than 50% reduction of longest diameter before treatment). After discharge from the hospital, patients underwent follow-up evaluations in the outpatient clinic at least once a week during treatment and biweekly until 6 months from the beginning of the treatment. Patient outcome, including length of hospital stay, complications related to the procedure, and treatment failure and death were recorded.

RESULTS

In this study 50 patients of liver abscess admitted and treated with per cutaneous catheter drainage in new civil hospital, Surat from May 2011 to December 2013.

In current study, highest incidence of liver abscess in 3rd to 5th decade and rarely seen at two extremes of life (Table 1).

Table 1: Age incidence of liver abscess patient.

Age group in years	No. of patients in our study	% of patients in our study
0-10	0	0
11-20	1	2%
21-30	7	14.5%
31-40	11	22.5%
41-50	16	32%
51-60	12	24%
61-70	3	6.5%
71-80	0	0
81-90	0	0
91-100	0	0
Total	50	100%

Table 2: Sex incidence of liver abscess patient.

Sex incidence of liver abscess patient	Male female ratio
Present study male female ratio	Male: 41, Female: 09 8.2:1
Giorgio A et al ³	2.9:1
Ch Yu S et al ⁴	2.5:1

Table 3: Socio-economic status of liver abscess patient.

Socio-economic status	Number	Percentage
Low	34	68
Middle	16	32
High	0	0

Table 4: Symptoms and signs of liver abscess patient.

Symptoms/signs	No. of patients in the present study	% of patients in our study	Mohsen AH et al ⁵	Chou FF et al ⁶
Fever	32	64%	70%	70%
Pain	35	64.5%	67%	53.4%
Rigor, chills	21	42%	-	-
Nausea/vomiting	22	44%	41%	-
Anorexia/weight loss	20	40%	35%	-
Diarrhea	14	28%	23%	-
Cough	14	28%	38%	-
Jaundice	10	20%	14%	23.8%
Tenderness	30	60%	54%	50.5%
Hepatomegaly	22	44%	30%	-
Ascites	3	6%	-	-
shock	2	4%	-	17.5%

In the present study liver abscess is far more common on male patients than female. Male female ratio was 8.2:1 (Table 2).

In the present study liver abscess is most common in low socio-economic status group of patients (Table 3).

The commonest symptoms are pain and fever seen in 64% each. Tenderness is present in most of patients. Whereas, signs of jaundice, ascites and shock are rare (Table 4). Out of 50 patients only 1 patient had pleural abscess due to transpleural puncture. In this study 100% success rate with no recurrence (Table 5).

Table 5: Complications of treatment (pig tail catheterization).

Complication	No. of patients	%
Infection (port site and deep seated)	-	-
Failure of resolution	-	-
Haemorrhage	-	-
Recurrence	-	-
Pleural complication	1	2%
Fever	-	-

None of the patients expired in my study. Median hospital stay is 5 days with range from 2-25 days (Table 6).

Table 6: Mortality rate and hospital stay.

Median hospital stay	Days
Current study	15 days
Nagor S et al ⁸	22 days
Mortality rate	%
Current study	0%
Mohsen AH et al ⁵	12.3%
Chou FF et al ⁶	15.5% (catheter drainage
Chou Fr et al	related)

DISCUSSION

Although liver abscess is a disease of any age group. It can develop at any age; it is more commonly seen in adult life with highest incidence in 3rd to 5th decade and rarely seen at two extremes of life which is quite similar with other studies (Table 1).

It is proved that liver abscess is far more common on male patients than female but reasons still unknown. It may be due to higher addiction of alcoholic and tobacco smoking and chewing in male gender which was also correlated with other studies like Giorgio A et al and Ch YU S et al (Table 2).^{3,4}

In this study liver abscess is most common in low socioeconomic status group of patients (Table 3). The commonest symptoms are pain and fever seen in 64% each. Tenderness is present in most of patients whereas, signs of jaundice, ascites and shock are rare. which was also correlated with other studies like Ch YU S et al, Mohsen AH et al and Chou FF et al (Table 4).⁴⁻⁶

Liver abscesses, both amoebic and pyogenic, continue to be an important cause of morbidity and mortality in the tropical countries. Patients usually present late when the liver abscess attains a large size. Percutaneous drainage (either needle aspiration or catheter drainage) with systemic antibiotics has become the preferred treatment for the management of liver abscesses. In contrast, for amoebic abscesses, the primary mode of treatment is medical; however, as many as 15% of these may be refractory to medical therapy, while 20% may be complicated by secondary bacterial infection. Such amoebic abscesses and those involving left lobe, or those with impending rupture also need to be drained.

Surgical drainage is now used only in cases which fail to respond to percutaneous drainage. Although, PCD is a preferred method most widely used to drain liver abscesses. Usually needle aspiration is preferred for smaller abscesses and catheter drainage is done in larger ones. But no clear-cut guidelines have been laid. Ch YU S et al, included only pyogenic abscesses and showed no significant difference between the two techniques. Agjak et al found that catheter drainage was better terms of success rate, but they limited the number of aspirations to two which may be a reason for lower success rate of percutaneous aspiration.

Rajak et al believed that large abscesses are more difficult to evacuate completely in a single attempt. This may be the reason, why many centers prefer PNA for abscesses <5 cm, and PCD for larger abscesses. In our study, also PNA failed in larger abscess and also in amoebic abscess as pus in amoebic abscess is thick. Both these techniques have certain disadvantages. Multiple attempts of PNA needed for large abscesses may be uncomfortable and perceived as more traumatic by patient. For smaller abscesses, daily production of pus may be small, but a larger abscess cavity may produce larger quantity of pus, which needs to be drained continuously. PCD has this obvious advantage over PNA, which may have accounted for quicker clinical recovery, lesser duration of parenteral antibiotics and lesser failure rate among patients treated with PCD.

In this study, out of 50 patients 1 patient had pleural abscess due to transpleural puncture, who was treated by ICD drainage and 100% success rate with no recurrence. Nagori S et al had 88% success rate.⁸ Rajak et al had 100% success rate with percutaneous catheter drainage (Table 5).⁷ Our institution and others have advocated the use of intermittent aspiration in combination with intravenous antibiotics as the first-line treatment for small liver abscesses, and catheter drainage in large liver abscess and amoebic abscess those which are refractory

to medical management. The current study adds further support to this management strategy.

In the present study, median hospital stay is 15 days with range from 2-25 days. Which was similar with study of Nagori S et al (Table 6).8 None of the patients expired in current study. The result of the present study suggests that both techniques are probably equally effective and safe and further implies that it is justifiable to undertake a multicenter study on the subject to provide a definitive answer. The main disadvantage of the needle aspiration technique is that multiple sessions may be required, but even the use of continuous catheter drainage does not guarantee a single session successful outcome. The current study and our previous work have shown no significant increase in morbidity or mortality from the repeated aspiration sessions

CONCLUSION

The current study represents an advantages of percutaneous pigtail catheter drainage is more effective in large liver abscess. Common symptoms of liver abscess are fever and abdominal pain. Intermittent needle aspiration considered as first line management of small liver abscess but main disadvantage of the needle aspiration technique is that multiple sessions may be required. Percutaneous pigtail catheter procedures are probably equally effective and safe. Pigtail catheter drainage is also more effective in amoebic liver abscess.

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institutional ethics committee

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