



ORIGINAL RESEARCH PAPER

General Surgery

PERCUTANEOUS ASPIRATION VERSUS PIGTAIL CATHETER DRAINAGE IN MANAGEMENT OF LIVER ABSCESS

KEY WORDS:

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ABSTRACT

Background: Liver abscess is a common disease in the differential diagnosis of upper abdominal and right lower respiratory tract diseases. Even with the advent of good diagnostic investigation like USG, the diagnosis is still delayed because of the nonspecific manifestations of disease. The traditional therapy of intra-abdominal liver abscess has been operative drainage as originally described by Volkmann in 1879. The reduction in mortality from 90% at the turn of century to the estimated 10-20% today cannot be ascribed to surgery alone. During the last few year, the radiological techniques namely computed tomography (CT) and ultrasonography (USG) has helped in localization of these abscess and their safe aspiration and drainage. **Methods:** The study was conducted on 30 patients of liver abscess. Currently, there are 2 alternative methods for drainage of pus from a large liver abscess. This study aims to compare the therapeutic effectiveness and safety of 'Percutaneous continuous catheter drainage' versus 'Percutaneous intermittent needle aspiration' in the percutaneous group of treatment for liver abscesses. All interventions were performed under ultrasonographic guidance. Only those patients having liver abscess/abscesses greater than 5 cm in at least one dimension, liquified & drainable were included in this study. **Results & Conclusions:** Thus, our study concluded that in view of greater volume of pus drained in first sitting, early clinical recovery, shorter duration of hospital stay and slightly more success rate continuous catheter drainage is effective percutaneous treatment modality than intermittent needle aspiration.

INTRODUCTION

Liver abscess is a common disease in the differential diagnosis of upper abdominal and right lower respiratory tract diseases. Even with the advent of good diagnostic investigation like USG, the diagnosis is still delayed because of the nonspecific manifestations of disease. The traditional therapy of intra-abdominal liver abscess has been operative drainage as originally described by Volkmann in 1879. The reduction in mortality from 90% at the turn of century to the estimated 10-20% today cannot be ascribed to surgery alone.

Patient Inclusion Criteria:

Including all patients at LG Hospital under the given study. Age 8- 70 years.

Single and approachable abscess on basis of ultrasonography. Abscess > 5cm on USC.

Patients who were ready for percutaneous aspiration and pigtail catheter drainage. During the last few year, the radiological techniques namely computed tomography (CT) and ultrasonography (USG) has helped in localization of

these abscess and their safe aspiration and drainage. Currently, there are 2 alternative methods for drainage of pus from a large liver abscess. This study aims to compare the therapeutic effectiveness and safety of 'Percutaneous continuous catheter drainage' versus 'Percutaneous intermittent needle aspiration' in the percutaneous group of treatments for liver abscesses.

Exclusion Criteria:

Patient's age < 8 years and > 70 years. Multiple abscess.

Abscess size < 5cm on USG which were managed conservatively.

Abscesses that were amenable to only surgical drainage (SD), like rupture or concomitant surgical pathology requiring urgent surgical exploration.

Study design

In the present prospective comparative study, 30 patients were selected from L.G. HOSPITAL, Ahmedabad. Study was conducted during the period from JULY 2018 to JANUARY 2019.

Atotal of 30patientswithliverabscesswereenrolled and randomizedintotwogroups.

All patientshad USGdone at thetimeofadmission All patientsweregiven Inj. Ceftriaxone 1gmIV12 hourly, Inj. Amikacin 500mg IV 12 hourly, Inj. Metronidazole 400mg IV8 hourly and Inj. VitaminK.

Twogroups:

GroupA (total patients:15)treatedwithantibiotic drugs with USGguided needleaspirationontheday of admission.

GroupB (total patients: 15)treatedwithantibiotic drugs with pigtail insertion.

Patientswereexamineddailyforbodytemperature, painand tenderness, Laboratory andradiological workupwasdoneasand whenrequired.

Cure wasdefined asimprovement clinically with subsidence of fever, and local signs, symptoms, decrease in WBC count and if follow-up ultrasonography showed reduction andnoevidence ofrelapses.

Data Collection & Evaluation:

Patient datawascollected from indoor casepapers. The patientswereevaluatedandfollowedupaccordingtothe protocol.

Detailed history ofpatient.

CompleteBlood Count, random blood sugar, LFT, RFT, Prothrombintimeand Chest X-rayweredoneimmediately on presentation.

Preliminary Ultrasound of Abdomen and Pelvis was doneonthesamedayof presentation.

Follow-upUSGdoneinall patientsonday 3, 7, 21 &thenas& whenrequiredafterwards.

Completeblood count wasrepeatedafter 48hours in all patients.LFT,

PTwererepeatedafter 48hoursincasesofabnormal preliminary reports.

Patient was informed about any interventionrequired and consent taken.

Patient datacollectedregarding:

Age,gender,complaints,past-surgicalhistory,past historyof liver abscess, history of alcoholism, diabetes, any immunodeficiency states, anyhistoryof biliary tract disorder history of amoebic dysentery&jaundicewastaken. Patients were examined in detail. Blood and radiological investigation sper formed were recorded.

During the last few year, the radiological techniques namely computed tomography (CT) and ultrasonography (USG) has helped in localization of these abscessandtheirsafeaspiration anddrainage. Currently, there are 2 alternative methodsfor drainageof pus from a large liver abscess. This study aims to compare the therapeutic effectiveness and safety of 'Percutaneous continuous catheter drainage' versus 'Percutaneous intermittent needle aspiration' in the percutaneous group of treatments for liver abscesses.

Exclusion Criteria:

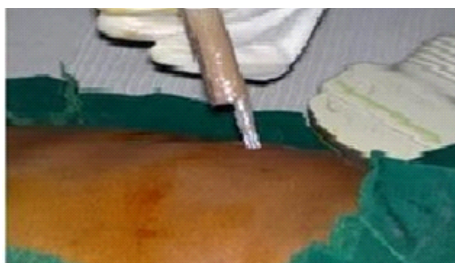
Patient'sage <8yearsand >70 years.Multiple abscess.

Abscess size <5cm on USG which were managed conservatively. Abscesses that were amenable to only

surgical drainage (SD), like rupture or concomitant surgical pathology requiring urgent surgicalexploration

Follow-up:

Patientswerefollowedupforaminimumperiod of 6 months: Onceaweekforonemonth Monthlyforfirst 3months Once after 3months,forrecurrent attacks.



Figure(a)



Figure(b)

Fig: (a) and(b) ShowingUSGguided percutaneous aspiration(creamy whitepus) of Pyogenic Liver Abscessfromrightlobe ofliver.



ShowingUSGguidedpercutaneousaspiration(Anchovysauce pus) from9th intercostalsspacebetweenanterior and posterioraxillary lines(Right lobe Amebic liverabscess)



Pigtail Catheter Drainage instrumentswith guide- wire, introducer and connector



Fig: Showing150 cc of Anchovysaucecollection intheurobag draining theLiver Abscess

Result:

Total 30 patients of liver abscess were included in the study. Patients randomised into two groups: group A (total no patients 15) treated with antibiotic plus USG guided aspiration & group B (total no patients 15) treated with antibiotic with pigtail catheter insertion. Followup after initiation of therapy revealed normalization of body temperature in all patients within 6 days in both groups.

Likewise, abdominal pain disappeared in 95% of patients within 5 days. Liver tenderness disappeared in 100 percent patients in both cases. Subsequently all patients were free of fever, pain and tenderness on day 7.

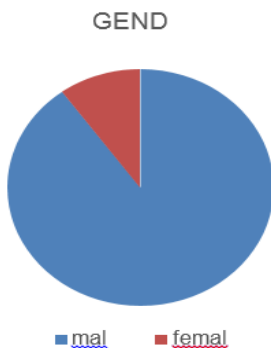
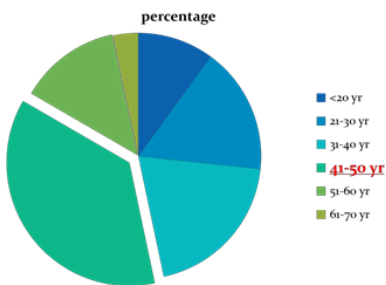
Likewise, the laboratory parameters improved in all patients by 7th day. By day 21, USG showed decreased size of abscess cavity in all patients. But residual cavity size was reduced more in group B; especially with original abscess cavity size of 7 cm. or more.

Comparison between both groups for reduction in size of abscess on day 7 & day 21 is shown in table below.

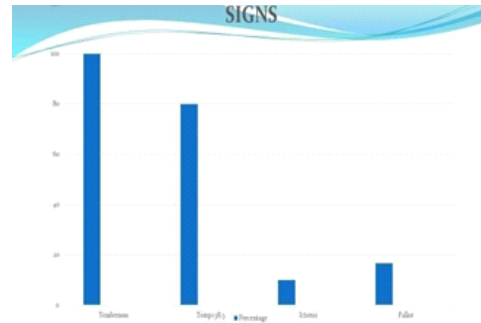
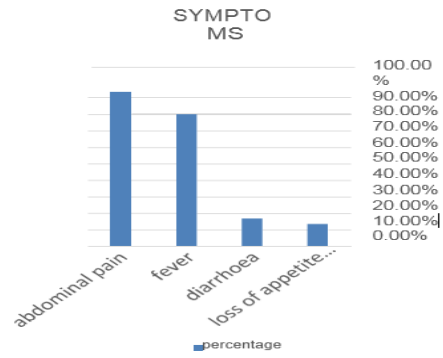
	GROUP A		GROUP B	
	Reduction in Abscess size in% (Original size 5cm - 7cm)	Reduction in Abscess size in% (Original size 7cm - 10cm)	Reduction in Abscess size in% (Original size 5cm - 7cm)	Reduction in Abscess size in% (Original size 7cm - 10cm)
USG ON DAY 7	65%	90%	60%	90%
USG ON DAY 21	90%	75%	95%	90%

Observation & Discussion:

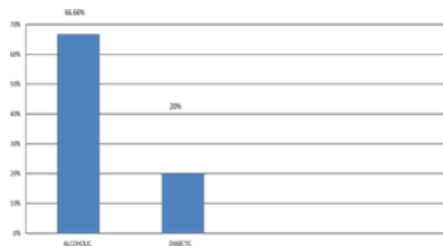
AGE GROUP	NO. OF PATIENTS	PERCENTAGE
<20	3	10
21-30	5	16.66
31-40	6	20
41-50	11	36.66
51-60	4	13.33
61-70	1	3.33
total	30	100



The present study shows higher incidence of liver abscess in males 27 patients (90%) than 3 females (10%) with a male:female ratio of 9:1.



Associated Factors



Blood Investigations:

Anemia (Hb < 10 gm/dl) was found in 13.33% of the cases. The Hb% of the patients ranged from 6.4 - 15.1 gm%.

Leucocytosis (> 10,000 c/mm³) was found in 80% of cases. Hyperbilirubinemia with serum bilirubin > 1.5 mg/dl was found in 36% of the cases in this study.

The liver function test which was most consistently raised was alkaline phosphatase. Alkaline phosphatase was found to be raised in 68% of cases in this study.

Elevated prothrombin time was seen in 48% of cases.

Chest X-RAY Findings:

Findings	No. of patients	%
Normal	18	72
Abnormal	7	28
Right Pleural Effusion	4	16
Bilateral Pleural Effusion	3	12

On Ultrasonography, the size of liver abscess on presentation ranged from 100cc to 360 cc.

USG was done on the day of admission and then repeated on day 3, 7, 21.

Volume of the abscess was calculated after measuring the abscess cavity in three dimensions and applying the formula used by Rajak et al [1] in their study.

Volume = $0.523 \times A \times B \times C$ where A, B and C are three dimensions.

Conclusion:

Image based percutaneous treatment (aspiration or catheter drainage) has replaced surgical intervention as the procedure of choice.

If performed carefully, both the procedures are safe with minimal complications.

Percutaneous catheter drainage is a better modality as compared to percutaneous needle aspiration.

Each repeated aspiration improved the success of treatment by percutaneous needle aspiration.

Significantly earlier clinical improvement and less time for 50% reduction in abscess cavity in the percutaneous catheter drainage group.

The chances of failure of percutaneous needle aspiration increased with the increase in size of abscess cavity to be aspirated (p=0.011) Hospital stay was reduced in drainage by pigtail catheter as the resolution of cavity was earlier and quicker compared to repeated aspirations.

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