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RUPTURED LIVER ABSCESS: A NOVEL SURGICAL TECHNIQUE

General Surgery

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ABSTRACT

Aims & Objective: To study effectiveness and outcome wide bore percutaneous catheter drainage and peritoneal lavage in ruptured liver abscess.
Material and method: All patients with ruptured liver abscess admitted in our hospital between 2015 and 2018 interval are included in this study. Prospective analysis of all the cases (proven clinically and radiologically) was carried out. Patients were subjected to wide bore PCD with thorough peritoneal lavage, and abdominal drains were kept in the sub hepatic space on right side and in pelvis on left side. Pus was sent for culture and sensitivity. Patients were followed up regularly.
Conclusion: Liver abscess (ruptured) is a surgical challenge which needs to be addressed in early stages to reduce the mortality. Most common affected age group falls between 30 and 50 years of age with male predominance. Percutaneous drainage with thorough peritoneal lavage is a safe and acceptable modality of treatment especially in very sick patients where anaesthetic burden itself will increase mortality. It may reduce overall mortality, improve the patients' condition; disease onset and presence/absence of co-morbid conditions play an important role in final outcome and prognosis of the patient.

KEYWORDS

ruptured liver abscess, conservative management of ruptured liver abscess, operative management of ruptured liver abscess.

INTRODUCTION:

Liver abscess is a common condition in our country and is associated with significant morbidity and mortality. There are various complications associated with hepatic abscesses, of which, rupture of the abscess is the most dreaded and can be fatal.

Rupture of abscess is a catastrophic consequence, subjects patient to a toxic load in peritoneum and rapid sepsis.

Previously open surgery was the only choice. Over the years laparotomy has been the gold standard of treatment and carried a mortality rate of 10 to 47 %.[1,2,3] Laparoscopic lavage has been tried successfully in patients with intra-peritoneal rupture of liver abscesses [4,5], the technique is well established and has advantage of avoiding the additional burden of laparotomy . But when patient is too sick, the anaesthetic and operative load itself may increase mortality. In cases of free peritoneal rupture, removal of free peritoneal pus and lavage can be helpful and repeated lavage can be done via the wide bore drains. With invent of effective antimicrobials, newer methods of radio diagnosis like USG and CECT and interventional radiological techniques like USG, CT guided aspiration, percutaneous catheter insertion, mortality associated with this condition has significantly decreased. Surgical intervention is rarely needed in cases of contained liver abscesses as percutaneous catheter drainage with antibiotics and metronidazole is sufficient to achieve cure[6, 7] Despite early, diagnosis and treatment, ruptured hepatic abscesses still carry significant morbidity and mortality and continue to challenge the clinicians with therapeutic dilemmas.

Aims & Objective:

1. To study effectiveness and outcome wide bore percutaneous catheter drainage and peritoneal lavage in ruptured liver abscess.
2. To analyse the various pathological and epidemiological factors in patients with ruptured liver abscess for better management and insight into the prognosis for such patients.

MATERIALAND METHOD:

All patients with ruptured liver abscess admitted in our hospital between June 2015 and May 2018 interval are included in this study. Prospective analysis of all the cases (proven clinically and radiologically) is carried out.

Inclusion criteria

- Cases where there was clinical suspicion of ruptured liver abscess followed by USG / CT confirmation of liver abscess with rupture-were included.
- Ruptured liver abscess irrespective of the aetiology and with or without associated intra-abdominal pathology were included.
- Patients refusing surgery / anaesthetic consent due to high risk

B. Exclusion criteria

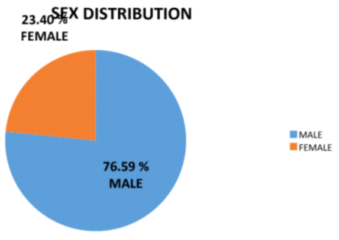
- Ultra-sonographic / CT evidence positive for presence of liver abscess but no evidence of rupture into the body cavity (pleura, peritoneum) or viscus.
- All other Space occupying lesions of the liver.
- Those patients having other causes of peritonitis.
- Two patients were excluded from our study because they had concomitant hollow viscus perforation.

All the patients were kept nil per oral with Foley catheter for urine output measurement and checking hydration. They were administered I.V. antibiotics (piperacillin tazobactum 4.5 gm and metronidazole 800

mg tds), symptomatic and supportive treatment. Blood investigations were evaluated for complete haemogram, total leukocyte counts, liver function tests, renal function and coagulation profile. Patients with deranged coagulation profiles were given fresh frozen plasma. As facility of emergency USG is not available in our hospital, USG guided drainage had to be planned one or two day before. Under local anaesthesia two wide bore drainage tubes (A D K 30 French drains) were placed with radiological guidance, 10 ml pus was aspirated and sent for culture and sensitivity. Thorough peritoneal lavage with 1 litre of normal saline was infused into the peritoneal cavity and clamped for 10 minutes. When possible, rolled and shifted the patient side to side to increase mixing. Abdominal drains were kept in the right sub hepatic space and left pelvic space. Caution was advised to the fact that the liver span may extend well below the costal margin and site of drainage was chosen below the palpable liver. Lavage was done with normal saline regularly. Patients were kept on regular monitoring of vitals and serum urea, serum creatinine, serum electrolytes, prothrombin time, INR, activated partial thromboplastin time, Complete blood counts. Patients were discharged under satisfactory conditions. Patients were kept for regular follow-ups.

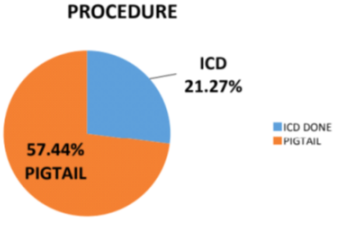
RESULTS:

Graph 1: In our study, out of 47 patients, 36 (76.59%) were males and 11 patients (23.40%) were females. Males are believed to be affected more probably because of alcohol consumption.



M: F = 36/11=3.27:1

Graph 2: Procedure:



ICD DONE IN: 10
PIGTAIL DONE IN: 27

Graph 3: Outcome:
DISCHARGED: 43
DIED: 04

Out of 4 patients 2 patients did not give consent for drainage procedure. Remaining 2 patients had very low general condition at presentation. Both were kept in ICU. One patient died 3 days after procedure and other died 5 days after procedure.

Graph 4: Site:

Out of 47 patients, 30 patients (63.82%) had liver abscess confined to right lobe only; in 11 patients (23.40%), it involved both right and left lobe, and in 6 patients (12.76%), it involved only left lobe.

R	30
L	11
R+L	06

Graph 5: Age Group Distribution:

- Average age = 39 years(18 to 70)
- Most common age group affected in our study is 31–40 years comprising of 14 patients (29.78%) and 13 patients between 18 to 30 years 27.65%), 13 patients between 41 and 50 years (27.65%), 4 patients between 51 and 60 years (8.51%), and 3 patients between 61 and 70 years (6.38%)

Graph 6:
Most of the patients presented with complaints of right hypochondrial pain/ tenderness specifically 15 patients (31.9%). 16 patients (34.04%) complained of nausea and vomiting, 20 patients (42.55%) had presented with complaints of anorexia and loss of appetite, and 31 patients (65.95%) had presented with high fever along with chills and rigors. All 47 patients (100%) had right hypochondrial pain/tenderness with or without generalized abdominal pain and 10 patients (21.27%) had guarding/rigidity. Moreover, 6 patients (12.76%) had signs of severe toxaemia on presentation.

Sign/Symptoms	
generalized abdominal pain	35
right hypochondrial pain / tenderness	15
nausea and vomiting	16
anorexia and loss of appetite	20
high fever	23
chills and rigors	8
guarding/rigidity	10
Toxaemia	6

Graph 7: Leucocytosis

Total leucocyte count	Day 1	Day 6	Day 10
<5000	3	0	1
5000-10000	5	10	32
10000-15000	6	24	10
15000-20000	9	8	
20000-25000	9	1	
25000-30000	7		
30000-35000	5		
35000and above	3		

Graph 8:Bilirubin-

Bilirubin	Day 1	Day 6	Day 10
<1	9	7	3
1-2	13	26	35
2-3	14	7	4
3-4	6	2	1
4-5	4	1	0
>5	1	0	0

Graph 9: Serum Creatinine-

Creatinine	Day 1
<1.5	15
1.5-2.5	21
2.5-3.5	7
3.5-4.5	2
4.5-5.5	1
5.5-6.5	1

Pig tail catheter drainage was needed in in 27 patients for drainage of co-existing unruptured liver abscesses. Intercostal drainage was needed in 10 cases with pyothorax. Two patients needed USG guided aspiration.

There was improvement in patient's general condition, Total Leucocyte Count, Serum bilirubin. Serum creatinine also responded well and returned gradually to baseline levels.

DISCUSSION:

Pus anywhere in the body needs drainage. Sepsis in the cases of ruptured liver abscess is due to the inflammation and pus in the peritoneal cavity. Management of ruptured liver abscess includes placement of catheters, laparoscopic drainage, and open surgical methods along with appropriate antibiotics and supportive treatment. Sometimes it is necessary to judge the amount of surgical and anaesthetic stress that the toxic debilitated patient can tolerate. As in our study abdominal pain with or without tenderness was the most common presenting complaint, Rajak *et al*. too concluded in their study with similar results.[8]

Our study showed male predominance in patients affected with ruptured liver abscess with 36 patients (76.59%), similar results were shown by Tiwari *et al*.[9]

Pang *et al*. in their study concluded the majority of patients affected were in age group of 50–65 years.[10] However, our study suggested the majority of patients affected in age group of 31–40 years (29.78%).

Similar results were shown in a study by Escher *et al*.[11]

In our study, 62% patients had abscess confined to the right lobe only, and similar results were shown by Sharma *et al* in his study concluded the same result with high propensity for right lobe.[12].

The procedure was initially undertaken by our team because the patient's relatives and guardians refused to give consent for surgery and were resigned to the fact that the patient was not going to survive the surgery but were ready to take the chances of local drainage. It is already an established fact that pleural empyema due to ruptured liver abscess is corrected by intercostal drainage and secondary procedures are usually not needed. There have been reports of ultrasound guided drainage of ruptured amoebic liver abscesses successfully but the facility of emergency USG is not available in our hospital and USG guide drainage had to be planned one or two day before, we were unable to use the technique[8].

So we devised this method to try to buy time. Under local anaesthesia two wide bore drainage tubes (A D K 30 French drains) were sited without any radiological guidance and thorough peritoneal lavage, and abdominal drains were kept in the right sub hepatic space and left pelvic drain in pelvis.

We found that patients improved in respect to their general condition, Total Leucocyte Count, Serum bilirubin and Serum creatinine.

CONCLUSION:

- Liver abscess (ruptured) is a surgical challenge which needs to be addressed in early stages to reduce the mortality. Most common affected age group falls between 30 and 60 years of age with male predominance being affected. Alcoholics and patients with diabetes and immunosuppression are at high risk for developing liver abscess.
- Right hypochondrial pain with or without generalized abdominal pain/ tenderness along with fever and chills/rigor forms main presenting features with increased total leukocyte counts.
- Wide bore percutaneous catheter drainage with thorough peritoneal lavage improves the patients' condition; however, disease onset, patient's general condition, and presence/absence of comorbid conditions play an important role in final outcome and prognosis of the patient.
- Additional procedures like drainage of residual abscesses in liver and intercostal tube drainage is also needed in cases of residual abscess and concomitant pleural rupture.

Limitations:

The comparative study could not be done because the patients included in this study were not suitable to undergo exploratory laparotomy or laparoscopic lavage.

Conflicts of interest:

There are no conflicts of interest.

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