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Original Research Paper

General Surgery

CLINICO PATHOLOGICAL STUDY OF LIVER ABSCESS IN TERTIARY CARE CENTRE

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ABSTRACT

Introduction- Liver abscess is the condition which involves collection of purulent material in liver parenchyma due to bacterial, parasitic, fungal, or mixed infections. The aim of this study was to determine the demographic profile, clinical presentation and etiology of the patients with liver abscess. **Methods-** Hospital based cross-sectional study was conducted on 50 patients liver abscess with more than 18 yrs age. **Results-** The mean age distribution of the study group is 40.02 $\pm$ 11.05 Yrs and more common in males (96.00%), The commonest symptom was fever(68.00%). Jaundice was present in 16.00% cases. The patients presented acutely with onset of symptoms in 50.00% of cases, sub acute presentation was noted in 24.00% of patents and chronic duration of onset were seen in 26.00% of patients. 33 patients were alcoholics. Hemoglobin less than 10gm% was found in 5 cases (10%). Leucocytosis of more than 12,000 cells / cumm was present in 34 patients (68.00%). 30.00% patients with elevated bilirubin levels. Alkaline phosphatase was found to be raised in 30.000% of cases. Hypoalbuminemia (< 3gm/dl) was observed in8.00%cases. Increased Prothrombin time > 20 sec was seen in 18.00% of cases. Increased SGOT and SGPT were seen in 20.00% and 10.00% of patients respectively. Chest X-ray showed elevation of the right hemi diaphragm in 10.00 cases. Right lobe of the liver was more involved than left lobe of liver. 82.00% of cases of liver abscess showed solitary abscess .47(94.00%) patients had "Anchovy sauce" appearance of the pus and revealed no growth. The abscess volume is < 50 cc is 17 cases (34.00%) were treated conservatively and those with volume > 50cc were treated by USG guided aspiration is 21 cases (42.00%). 5 cases were treated by Laparatomy and 7 cases by laparoscopic abscess drainage. 8 patients were developed complication. Out of 8 cases, 2 Cases pleural effusion, 5 case ruptured into peritoneal cavity and 1case septicemia. **Conclusion-** In conclusion, ALA was more predominate approximately 90% cases in this region compared to PLA. People of low socio-economic status were more affected due to poor hygiene and drinking contaminated water.

KEYWORDS : ALA, PLA, Liver

INTRODUCTION

Liver abscess is the condition which involves collection of purulent material in liver parenchyma due to bacterial, parasitic, fungal, or mixed infections. Liver abscess has been an important clinical problem which requires prompt diagnosis and early interventions.[1]

Benign conditions of liver have lots of clinical implications. Of these, liver abscess is a common condition worldwide particularly in the tropical countries. Among the developing countries, India has 2nd highest incidence of liver abscess in the world. There are many pre disposing factors for liver abscess. The infective agents causing liver abscess can be classified as bacterial, parasitic or fungal causes. Among all, pyogenic abscesses accounts for four fifth of liver abscess in developed countries, whereas amoebic liver abscess account for two third of liver abscess in developing countries.[2]

Two types of liver abscess are common –Amoebic or protozoal (ALA) and Pyogenic liver abscess (PLA) with majority of amoebic etiology in developing countries and pyogenic in developed countries.[3-6]

PLA and ALA have many features in common and diagnosis is often delayed due to vague clinical symptoms resulting in adverse outcomes.[7] There is paucity on data in tertiary care hospital in Rajasthan so we are in this study analyze the relationship of occurrence of liver abscesses to patient particulars such as age, sex, religion, and socioeconomic status, find out common clinical presentations. We also aimed to identify the etiological factors and the complications in liver abscess.

MATERIAL & METHOD

1.STUDY DESIGN: Cross sectional Hospital based study

2.STUDY PLACE: Department of General Surgery, PBM Hospital, Bikaner

3.STUDY DURATION: one year

4.STUDY POPULATION: All liver abscess patient admitted in ward of department of surgery

5.SAMPLING TECHNIQUE: Consecutive sampling

6.SAMPLE SIZE: all eligible patients admitted in surgery ward was included in study

7.INCLUSION CRITERIA:

i. patients willing to participate.
ii. Paitents with sign and symptom of liver abscess.
iii. Age > 18 yrs

8.EXCLUSION CRITERIA:

i. Not Willing to participate.
ii. Severly ill patients.
iii. Patients with comorbidities.
iv. Using antibiotics before hospitalisation

9.STUDY TOOL:

1. A pre tested pre structured proforma was used.

10. DATA COLLECTION & ANALYSIS:

After obtaining permission from Ethical Committee and informed verbal consent of study population selected through analyzing inclusion and exclusion criteria and with help of consecutive sampling, the questionnaire was administered to study subjects by the researcher. All relevant information related to study subjects' socio demographic details, anthropometry, clinical profile, biochemical parameters were taken and diagnosis will be confirmed by abdominal Ultrasonography and examination of the aspirates. Pyogenic liver abscess were diagnosed based on positive bacterial cultures of the aspirates and response to sensitive antibiotic therapy. ALAs will be diagnosed by the nature of the pus (Anchovy Sauce), negative culture and response to standard anti-amoebic therapy. All data collected was entered into Microsoft Excel and will be analysed with help of appropriate software and tests of significance considering level of significance as $p<0.05$.

OBSERVATIONS

The mean age distribution of the study group is 40.02 $\pm$ 11.05 Yrs with youngest patient at 18 years of age and oldest patient being 65 years of age. Liver abscess in this study was more common in males (96.00%) than females (4%). The commonest symptom was fever(68.00%) followed by pain abdomen (66.00%). Jaundice was present in 16.00% ,diarrhea occurring in 10.00%, cough in 2.00% and altered sensorium 1.25%. The most common sign was fever which was present in 68.00% patients, 38.00% of patients had abdominal tenderness at the time of diagnosis and 36.00% patients had hepatomegaly, 24.00% of patients had icterus, pallor was present in 10.00% of patients. In this study patients presented acutely with onset of symptoms <7 days in 50.00% of cases. Sub acute presentation between 7 days – 2 months was noted in 24.00% of patents and those with chronic duration of onset > 2 months were seen in 26.00% of patients.

Table 1: Percentage of abnormal laboratory investigations

Investigation	No. of patient	%
Anaemia (Hb < 10 gm%)	5	10.00
Leucocytosis (> 12,000 c/cmm)	34	68.00
Diabetic (RBS > 200 mg/ dl)	8	16.00
Raised urea (> 60 mg / dl)	6	12.00

Hemoglobin less than 10gm% was found in 5 cases (10%) and lowest hemoglobin noted in this series was 7.8 gm%. Leucocytosis of more than 12,000 cells / cumm was present in 34 patients (68.00%). Raised urea (> 60mg/dl) was found in 6 cases (12.00%).

Table 2 : Analysis of LFT

LFT	No.of patient	%
Serum Bilirubin < 1/ mg%	35	70.00
Raised ALP (Alkaline phosphatase)	15	30.00
Hypoalbuminemia (< 3gm / dl)	4	8.00
Increased PT time (> 20 sec)	9	18.00
Increased SGOT (> 40 IU/l)	10	20.00
Increased SGPT (> 40 IU/L)	5	10.00

30.00% patients with elevated bilirubin levels. Alkaline phosphatase was found to be raised in 30.000% of cases Hypoalbuminemia (< 3gm/dl) was observed in 8.00% cases. Increased Prothrombin time > 20 sec was seen in 18.00% of cases. Increased SGOT and SGPT were seen in 20.00% and 10.00% of patients respectively .

Table 3 : Chest X-ray

Chest X-ray	No. of patient	%
Elevated hemidiaphragm	5	10.00
Pleural effusion	2	4.00

Chest X-ray showed elevation of the right hemi diaphragm in 10.00 cases. Obliteration of right costophrenic angle was seen in 4.00% of cases.

Table 4: Ultrasonogram Examination

Location	No. of patient	%
Right lobe	38	76.00
Left lobe	6	12.00
Both lobes	6	12.00
Total	50	100

Ultrasonogram examination was done in all cases. It showed evidence of abscess in liver in all the cases

Right lobe of the liver was more involved than left lobe of liver. Right lobe involvement was present in 76.00% , left lobe in 12.00% and both lobes in 12.00% of cases

Table 5: Solitary and multiple abscess

Number	No. of patient	%
Solitary	41	82.00
Multiple	9	18.00
Total	50	100

82.00% of cases of liver abscess showed Solitary abscess in Ultrasonogram examination and 18.00% cases showed multiple abscesses.

Table 6: Pus culture Analysis

Organism	No.of patient	%
No growth / Anchovy sauce	47	94.0%
Non- fermenting gram –ve	2	4.00%
Staph aureus	1	2.00%
Total	50	100%

In this study 50 cases were subjected to invasive treatment. Out of 50 cases, 47(94.00%) had "Anchovy sauce" appearance of the pus and revealed no growth. While growths were obtained in 3(6.00%) of these cases, non- fermenting gram –ve organisms grown in 2 cases (4.00%) and staph aureus in 1 case (2%).

Table 7: Analysis of treatment

Treatment	No. of patient	%
Conservative	17	34.00
Aspiration	21	42.00
Laparatomy	5	10.00
Laparoscopic abscess drainage	7	14.00
Total	50	100

Out of 50 cases, with liver abscess, the volume is < 50 cc is 17 cases (34.00%) were treated conservatively and those with volume > 50cc were treated by USG guided aspiration is 21 cases (42.00%). 5 cases were treated by Laparatomy and 7 cases by laparoscopic abscess drainage.

DISCUSSION

In our study mean age distribution of the study group is 40.02 $\pm$ 11.05 Yrs with youngest patient at 18 years of age and oldest patient being 65 years of age. Liver abscess in this study was more common in males (96.00%) than females (4%).

Paul SN et al [8]was found that the maximum age incidence for amoebic liver abscess was 21-40 years. The male to female ratio was 14:1. This was consistent with the findings of Ramani et al.[9] Among PLA patients, the maximum age of incidence was 41-60 years which is consistent with the observations Bugti et al.[10] The male to female ratio was 1.5:1 in which the findings were consistent with those of Lone et al.[11]

According to Walter D Gaisford James B.D, Mark, the male female ratio is 7:1 whereas in our study we found out that the difference is 9:1 ratio[12].

The commonest symptom was fever (68.00%) followed by pain abdomen (66.00%). Jaundice was present in 16.00% ,diarrhea occurring in 10.00%, cough in 2.00% and altered sensorium1.25% in our study.

Paul SN et al [8] was found that the abdominal pain was the common symptom noted in both ALA (90%) and PLA (100%) cases which was followed by the fever, weight loss, jaundice, anorexia, diarrhea and cough. These findings were consistent with previous study reports.[13]

Greenstein et al [14]and Rubin et al [15]observed in their studies that fever was present in 95 & 87% of patients respectively whereas in our study we found out a less incidence of fever in 68.00% of patients. Pain abdomen was noticed in 66.00% of patients whereas Greenstein et al.[14] observed a high presentation of pain abdomen in 84% of cases while Rubin et al. observed 47% [15]. Cough was not a significant presentation in our study which was present in 3 patients. Other symptoms and signs were comparable to other studies.

In this study patients presented acutely with onset of symptoms <7 days in 50.00% of cases. Sub acute presentation between 7 days – 2 months was noted in 24.00% of patents and those with chronic duration of onset > 2 months were seen in 26.00% ofpatients.

The onset of the disease is subjected to great variations depending upon the type, location and quantity of liver abscess; it may be acute, insidious, clinically undetectable or fulminant form. In this present study acute onset <7 days was seen in 52.5%, sub acute onset 7 days — 2 months was seen in 23.75% of patients and the same 23.75% with the chronic presentation of liver abscess.

According to Bhagwan satiani, Eugene D. Davidson, duration of symptoms prior to admission varied considerably from one day to three months[16].

According to Maingot's abdominal operations, most patients of liver abscess manifest symptoms for less than 2 weeks but a more indolent course occurs in 1/3rd of thepatients[17].

Alcoholism was found to be the most consistent etiological factor in this study of liver abscess. 66.00% of the cases of this study were found to be alcoholics. The presence of alcoholism as a risk factor was noticed in many studies. In Indian culture almost all the alcoholics are males. It can explain the high incidence of liver abscess among the males in comparison to the western literature. According to Shyam Mattur, Alok Mehta et al, the percentage of alcoholics in the patients of liver abscess was noted between 48-71 % of cases[18]. Poor hygiene and eating unhygienic foods were the source of contamination for both the parasitic and bacterial cause of the disease, also plays a significant role in causing liverabscess.

Hemoglobin less than 10gm% was found in 5 cases (10%) and lowest hemoglobin noted in this series was 7.8 gm%. Leucocytosis of more than 12,000 cells / cumm was present in 34 patients (68.00%). Raised urea (> 60mg/dl) was found in 6 cases (12.00%) in our study.

According to Bhagwan satiani and Eugene D. Davidson, anaemia was present in 39% of cases[19]. There is less literary evidence suggesting anaemia is a predisposing factor for liver abscess. But high incidence of anaemia is noted in many of the cases, and the relation is not well understood. Leukocytosis was observed in our cases which was comparable to other studies.

In our study 30.00% patients with elevated bilirubin levels. Alkaline phosphatase was found to be raised in 30.000% of cases Hypoalbuminemia (< 3gm/dl) was observed in 8.00% cases.

Increased Prothrombin time > 20 sec was seen in 18.00% of cases. Increased SGOT and SGPT were seen in 20.00% and 10.00% of patients respectively.

Observations by Bhagwan Satiani and Eugene D.Davidson revealed elevated serum bilirubin was seen in 36% of cases, whereas in our study the elevated bilirubin levels were noted in 30.00% patients[19].

Surgical drainage of liver abscesses has been an accepted therapy for decades. The diagnosis and treatment of liver abscess has changed due to advances in imaging techniques.

Out of 50 cases, with liver abscess, the volume is < 50 cc is 17 cases (34.00%) were treated conservatively and those with volume > 50cc were treated by USG guided aspiration is 21 cases (42.00%). 5 cases were treated by Laparatomy and 7 cases by laparoscopic abscess drainage.

All cases were started on metronidazole IV at a dose of 40 mg/kg/wt (2.0—2.5gm/day in divided doses for 8-10 days). When patients did not show improvement in 24-48 hrs of metronidazole therapy, broad spectrum 3rd generation cephalosporins were started.

In 42.00% patients who had abscess >50 cc were chosen for percutaneous aspiration. The site, depth and direction of aspiration were marked under USG guidance, aspiration needle was usually used and under aseptic precautions, the abscess cavity was entered. Local anesthetic was used, pus was aspirated and sent for culture and sensitivity; no complication were noted due to this procedure apart from local pain which soon subsided after analgesics. Patient showed improvements in their symptoms and signs within 48-72 hrs of the aspiration. Percutaneous catheter drainage was not done on any patient in this study. Laparotomy as the initial line of treatment was performed in 5 cases of liver abscess ruptured into peritoneal cavity. On laparotomy, thorough peritoneal lavage and drains were kept.

CONCLUSION

In conclusion, ALA was more predominate approximately 90% cases in this region compared to PLA. Males are more affected and the incidence rate can relate to addiction of alcohol as it suppresses the functioning of Kupffer cells in the liver and acts as a direct hepatotoxin. People of low socio-economic status were more affected due to poor hygiene and drinking contaminated water. USG was found to be useful in diagnosing liver abscess with more accuracy.

According to Arshed Zafar, Sajjad Ahnied, needle aspiration is safe, rapid effective method of treating liver abscess. Routine aspiration is not indicated. It should be initial line of treatment in abscess > 300 cc, impending rupture or abscess that do not respond to chemotherapy.

According to Antonia, Giorgio, Lucien Turuntino percutaneous needle aspiration is an efficient, effective and low cost technique that can even be performed on an out patient basis [48]. It is safe, free from significantcomplication.

Laparatomy was done in 5 cases for liver abscess which ruptured intraperitoneally. Laparoscopic liver drainage was done in 7 patients which is technically difficult for the young laparoscopic surgeons.

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