

Clinico-Pathological Study and Management Strategies of Liver Abscess: a Prospective Study in Narayana General Hospital

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Abstract

Context: Liver abscess continues to be disease with considerable mortality in our country. Amoebic liver abscess, pyogenic and tubercular aetiologies should always be entertained in the differentials. The incidence of tubercular liver abscess (TLA) has increased in recent past due to increased incidence of predisposing factors like alcoholism, immunodeficiency, irrational usage of antibiotics, and emergence of multi drug resistant bacilli. Primary prevention by improving sanitation, health education, early diagnosis and prompt treatment may result in lowering mortality / morbidity associated with the disease. This study has tried to delineate clinical profile, risk factors and management strategies of liver abscesses. **Aims:** • To determine Demographic profile, Etiology, Clinical Spectrum, laboratory investigations in cases of liver abscess • The study the efficacy of Ultrasonography in determining the etiology. • To study the bacteriological characteristics including its antibiotic sensitivity. • To study the influence of alcohol, diabetics & immunocompromised diseases in incidence of Liver abscess and, • To evaluate efficacy, recurrence rate, complications, morbidity & mortality, duration of hospital stay associated with Management Strategies followed. **Settings and Design:** A Prospective Clinico-Pathological study with 100 patients diagnosed to have Liver Abscess and undergoing treatment in Narayana General Hospital, Nellore between October 2012 to September 2014 inclusive of a follow up period of 6 months. **Methods and Material:** Inclusion criteria: • All cases of liver abscess (bacterial and parasitic) diagnosed

clinically and/or ultrasonographically. • All cases in evolving, liquified & ruptured stage with or without peritonitis Exclusion criteria: • Age <18yrs not included. • Traumatic and Past history of liver abscess Patient data collection and evaluation. Detailed history of patient was entered in proforma. Complete haemogram, LFT, PT, Ultrasound Abdomen was done on day of presentation. Patient was put on conservative line of management and followed up daily. Repeat Ultrasound / CT /MRI Abdomen & pelvis will be done immediately if patient condition does not improve/worsens or after 3-4 days as a routine. Complicated cases like ruptured liver abscess were immediately taken up for surgery. Pus was sent for gram's stain and culture and sensitivity. **Management:** Percutaneous needle aspiration was done on patients who had abscesses <5cms under ultrasound guidance. Antibiotics were given according to cultures. If abscess was > 5cms or > 200cc pig tail drainage is done under local anaesthesia. Patients were examined daily for improvement of pain, fever, anorexia, hepatomegaly. Mean Hospital Stay was recorded. Laparotomy was done in cases of ruptured abscess with peritonitis. Relapses were noted and repeat aspirations were performed when necessary. Follow up of patients: Patients were followed up, monthly for first 3 months, then once after 6 months, for recurrent attacks or development of complications and to monitor the efficacy of the treatment given. Cure was defined as improvement clinically with subsidence of fever, and local signs, symptoms, decrease in WBC count and follow-up ultrasonography showed reduction in size < 3 cm in diameter and no evidence of relapses. Statistical analysis used: The Statistical software namely SPSS 15.0, used for the analysis of the data and Microsoft word and Excel have been used to generate graphs, tables etc. **Results:** The highest incidence occurred in the age group 31-60 years (71%) with mean age of 46 years. Males (89%) were more commonly affected. Pain abdomen and

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Fever were most consistently occurring symptom in 100%, 94% respectively. Diarrhoea, cough, hepatomegaly, Jaundice and shock, pleural effusion, basal consolidation was other modes of presentation. Alcohol was the single most consistent etiological factor in all patients of liver abscess. Leucocytosis, anaemia, diabetis, altered RFT and LFT, Prolonged PT, were the most common abnormal lab findings. 44 cases had amoebic liver abscess and 30 had pyogenic abscess. E.coli, Klebsiella, Staph were the most common organism isolated in pyogenic liver abscess. Ultrasonography revealed solitary abscess in 70.0% and multiple abscesses in 30.0%. Isolated right lobe abscess was seen in 66.0% and left lobe abscess in 04%. Cases of multiple small and solitary abscesses were managed conservatively. 26 cases had recurrence. 30 were subjected to percutaneous aspiration, 32 cases underwent Pig Tail Catheter Drainage, 12 required Laparotomy and Drainage along with (3%) ICD insertion for rupture into pleural cavity. Patients were followed up. Recurrences were noted in 8 cases in Conservative & aspiration management group. Out of 30 cases 25 cases underwent single aspiration, 4 cases underwent twice aspiration and 1 case underwent thrice aspiration. Cryptogenic was the most common aetiology in Amoebic liver abscess (97.1%) and Pyogenic liver abscess (73.3%). Peritoneal rupture (21.0%) was the most common complication associated with Liver abscess. In this study 3 cases were positive for HIV serology. Mortality occurred in 6 cases in our study. *Conclusions:* Liver abscess is a very common condition in India. India has 2nd highest incidence of liver abscess in world. Liver abscesses occurred most commonly between 30-60 years males. Pain abdomen, fever are consistently occurring symptom. Alcohol consumption was the single most important etiological factor for causation of liver abscesses. Alkaline phosphatase is the most consistently elevated among all Liver Function Tests. Raised WBC count, Alkaline phosphatase level, Diabetes, Hypoalbuminaemia, Prolonged Prothrombin time were considered as the predictive factors of complicated (Ruptured) liver abscess in this study. Diabetes mellitus was more frequently associated condition in cases of liver abscess and especially Pyogenic liver abscess cases. Liver abscess usually present as a solitary abscess most commonly in the right lobe of liver. Enterococcus was the most common organism isolated in pyogenic liver abscess. Patient management depends on number and size of abscess. Cryptogenic was the most common aetiology in Amoebic liver abscess as well as in Pyogenic liver abscess. Peritoneal rupture was the most common complication associated with Liver abscess. Mortality was seen in 6 cases in this study.

Keywords: Liver Abscess; Pyogenic Abscess; Amoebic Liver Abscess; Cryptogenic Abscess.

Introduction

Liver abscess (LA) is defined as collection of purulent material in liver parenchyma which can be due to bacterial, parasitic, fungal, or mixed infection. Liver abscess is a common condition in India and has 2nd highest incidence in the world. Pyogenic abscesses account for three quarters of hepatic abscess in developed countries, While amoebic liver abscess cause two third of liver abscess in developing countries [2]. Amoebiasis is presently the third most common cause of death from parasitic disease. The World Health Organisation reported that Entamoeba Histolytica causes approximately 50 million cases and 100,000 deaths annually [3].

Liver abscess continues to be disease with considerable mortality in our country. Locally made alcoholic drinks like neera, arrack may be the routes of faeco-oral transmission of amoebic cysts. Amoebic liver abscess (ALA) accounts for 3-9% of all cases of amoebiasis. However, pyogenic and tubercular aetiologies should always be entertained in the differentials. The incidence of tubercular liver abscess (TLA) has increased in recent past due to increased incidence of predisposing factors like alcoholism, immunodeficiency, irrational usage of antibiotics, and emergence of multi drug resistant bacilli. In the wake of HIV epidemic in our country, this study also tries to investigate the relation between liver abscess and immuno-compromised state of AIDS. Primary prevention by improving sanitation, health education, early diagnosis and prompt treatment may result in lowering mortality / morbidity associated with the disease. This study has tried to delineate clinical profile, risk factors and management strategies of liver abscesses.

Materials and Methods

The data for this prospective study was obtained from 100 patients diagnosed to have Liver Abscess and undergoing treatment in NARAYANA GENERAL HOSPITAL, NELLORE, between October 2012 to september 2014 inclusive of a follow up period of 6 months.

Inclusion Criteria

- All cases of liver abscess (bacterial and parasitic) diagnosed clinically and/or ultrasonographically.
- All cases in evolving, liquified & ruptured stage with or without peritonitis

Exclusion Criteria

- Age <18yrs not included.
- Traumatic and Past history of liver abscess

Patient Data Collection and Evaluation

Detailed history of patient was entered in proforma. Complete haemogram, LFT, PT, Ultrasound Abdomen was done on day of presentation. Patient was put on conservative line of management and followed up daily. Repeat Ultrasound / CT /MRI Abdomen & pelvis will be done immediately if patient condition does not improve/worsens or after 3-4 days as a routine. Complicated cases like ruptured liver abscess were immediately taken up for surgery. Pus was sent for gram's stain and culture and sensitivity.

Management

Percutaneous needle aspiration was done on patients who had abscesses <5cms under ultrasound guidance. Antibiotics were given according to cultures. If abscess was > 5cms or > 200cc pig tail drainage is done under local anaesthesia. Patients were examined daily for improvement of pain, fever, anorexia, hepatomegaly. Mean Hospital Stay was recorded. Laparotomy was done in cases of ruptured abscess with peritonitis. Relapses were noted and repeat aspirations were performed when necessary.

Follow up of patients

Patients were followed up, monthly for first 3 months, then once after 6 months, for recurrent attacks or development of complications and to monitor the efficacy of the treatment given. Cure was defined as improvement clinically with subsidence of fever, and local signs, symptoms, decrease in WBC count and follow-up ultrasonography showed reduction in size < 3 cm in diameter and no evidence of relapses.

Results

Eighty four patients were alcoholics out of 84, 83 were males 1 female. All 84 patients had duration of alcoholism more than 1 year. 31 patients had more than 10 yrs risk probability is also highest in those 31 patients (Table 6).

Mean Hb in this study group was 11.46 gm/dl. The Hb% of the patients ranged from 6.4-17.0 gm%. Mean WBC count was 14,770 c/cumm and it ranged from 5000-42,400 c/cumm. The mean RBS was 120 mg/dl

Table 1: Age distribution of patients studied

Age in years	Number of patients	%
19-20	6	6.0
21-30	14	14
31-40	25	25.0
41-50	21	21.0
51-60	25	25.0
>60	9	9.0
Total	100	100.0

The mean age was 46 years

Table 2: Gender distribution of patients studied

Gender	Number of patients	%
Male	89	89
Female	11	11
Total	100	100

Table 3: Latent period of illness

Latent period of illness	Number of patients	%
Acute < 7 days	60	60.0
Subacute > 7 days	37	37.0
Chronic > 2 months	3	3.0
Total	100	100

Table 4: Symptoms

Symptoms	Number of patients	%
Pain abdomen	100	100
Fever	94	94
Cough	30	30
Jaundice	24	24
Diarrhoea	16	16

Table 5: Clinical signs

Clinical signs	Number of patients	%
Abdomen tenderness	100	100
Fever	94	94
Respiratory findings	61	61
Hepatomegaly (>14cms)	50	50
Icterus	24	24
Pallor	23	23
Shock	8	8

Table 6: Alcoholism in cases of liver abscess

Alcoholism	Total no of patients	%
Alcoholics	84	100
Duration >1year	84	84
Duration >10 years	31	31

Table 7: Laboratory investigations

Lab investigations	No of patients	%
WBC >11,000	72	72
RBS > 200mg/dl	29	29
Hb <10G/dl	23	23
Urea >45mg/dl	21	21
Creatinine>1.4mg/dl	16	16

Table 8: Liver function test analysis

LFT	No of patients	%
s. albumin <3g%	84	84
ALP >150IU/L	83	83
SGOT >40IU	52	52
SGPT >40IU	45	45
PT>20sec	29	29
Bilirubin >2.4mg/dl	23	23

Table 9: Pus culture analysis

Pus culture	No of patients	%
Enterococcus	13	34.2
K.pneumonia	9	17.6
E.coli	7	9.45
Staph aureus	1	1.35
Culture negative	44	59.4

Table 10: Incidence of hiv in patients of liver abscess

Incidence of HIV	Number of patients	%
Present	3	3
Absent	97	97

Table 11: chest x-ray findings

Chest X ray	No of patients	%
Normal	39	39
Abnormal	61	61
RPEF	52	52
B/L PE	8	8
Kochs	1	1

Table 12: usg findings

USG findings	No of patients	Percentage
Solitary abscess	70	70
Right lobe	66	66
Left lobe	4	4
Multiple abscess	30	30
Both lobes	4	4
Right lobe	26	26
Volume of abscess	100	100
</=200cc/<5cms	56	56
>200cc/>5cms	44	44

Table 13: usg findings in ruptured liver abscess

Treatment	No of patients	Percentage
Solitary abscess	12	100
Right lobe abscess	10	83.3
Left lobe abscess	2	16.7
Multiple abscess	0	0

Table 14: Treatment

Treatment	No of patients	Percentage
Conservative	26	26
Percutaneous aspiration	30	30
Pigtail drainage	32	32
ICD insertion	3	3
Laparotomy	12	12

Table 15: Number of aspirations done

No of aspirations	No of patients	Percentage
Single	25	83.33
Two	4	13.33
Three	01	3.33

Table 16: Predictors of complicated liver abscess according to management

Predictors	Conservative (n=26)	Management PCA+pigtail drain (n=62)	Ruptured liver abscess (n=12)
Alcoholism (> 10 yrs)	0	18	12
Alkaline phosphatase >300IU	3	4	10
Albumin <2mg/dl	0	6	10
Prothrombin Time >20sec	2	7	12
Total leucocyte count	0	2	12
Pleural effusion	7	42	12
Hospital stay >3weeks	0	7	6

Table 17: Duration of follow up

Duration of follow up in months	Number of patients
1-5	12
6-10	34
11-15	20
16-20	14
21-25	10

Patients were followed up for a period of 6 months

Table 18: Recurrence

Recurrence	No of patients	%
Yes	8	8.5
No	86	91.5

86 of 94 there was no recurrence. 6 patients death occurred.

Table 19: Correlation of incidence of recurrence with management

Incidence of recurrence	Yes	No
Conservative - 26	5	20
Percutaneous aspiration -30	3	27
Pig tail drainage	0	32
Laparotomy & procedure - 12	0	6

Table 20: Correlation of clinical features with type of liver abscess

Clinical features	ALA (70)	PLA (30)
Solitary liver abscess	53	17
Multiple liver abscess	17	13
Abdominal pain	70	30
Fever	64	30
Diarrhoea	10	6
Cough	14	16
Tenderness and guarding	26	23
Hepatomegaly	34	16
Pleural effusion	36	24
Ascites	7	8
Jaundice	12	12
Increased ALP	56	27
RBS >200mg/dl	9	20
WBC >11000ccmm	46	26
Albumin <3g/dl	55	29
Bilirubin >2.4g/dl	11	12
Ruptured peritonitis	5	7

Table 21: Correlation of etiology with type of liver abscess

Etiology	ALA (70 Cases)	PLA (30 Cases)
Cryptogenic	68(97.1%)	22(73.3%)
Biliary	0	4(13.3%)
Amoebic colitis	2(2.9%)	0
HIV	2(2.9%)	1(3.3%)
Tuberculosis	0	3(10.0%)
Alcoholism	55(78.6%)	29(96.7%)

Table 22: Complications

Complications	No of patients	Percentage
Intra abdominal rupture & peritonitis	12	12
Shock	8	8
Cholangitis	2	2
Pleural rupture	3	3
Pericardial rupture	0	0
Death	6	6

and ranged from 60-390 mg/dl, Mean urea levels in cases was 33mg/dl and it ranged from 18-82 mg/dl (Table 7).

Alcoholism (>10yrs), Alkaline Phosphatase (>300IU/ml), Albumin (<2.0mg/dl), Prothrombin time (>20 seconds), Total leucocyte count (>20,000 cc/mm), Pleural effusion and Hospital stay (>3weeks) were found to have strong correlation with complicated liver abscess which shows they are good predictive marker of complications associated with liver abscess (Ruptured Liver Abscess).

Discussion

Liver abscess is a bothersome condition. Although relatively uncommon, its incidence is not decreasing and should be expected to increase. The epidemiology causative agents and mortality have changed remarkably from initial case descriptions.

The development of new radiological techniques, the improvement in microbiological identification, and the advancement of drainage techniques, as well as improved supportive care, have decreased mortality rates to 5-30%; yet, the prevalence of liver abscess has remained relatively unchanged. Untreated this infection remains uniformly fatal.

Controversies in the management of liver abscess still exist. Surgical drainage of liver abscess has been accepted therapy for decades. The diagnosis of liver abscess has changed due to advances in imaging techniques.

Out of 100 cases in this study, 26 patients who had multiple small abscess and solitary abscess with very less volume were treated conservatively with antibiotics alone. Medical therapy includes administration of either a single agent or combination of drugs. A nitroimidazole such as metronidazole is the drug of choice for ALA. The newer imidazoles has also been tried in treatment of ALA. In a randomised double

blind trial of metronidazole versus secnidazole, Bhatia et al proved that secnidazole is as effective as in treating ALA as metronidazole. Conservative method of treatment is in comparison with other above mentioned studies but recurrence rate is high in conservative group.

Table 23: Discussion on age incidence

Studies	Mean Age (In Years)
Anjana Gopi et al ⁴	47 years
Channanna et al ⁵	43 years
Khee siang chang, chin ming ⁶	47.6 years
Antonio gorgia ⁷	45.3 years
Present study	47 years

Table 24: Discussion on sex incidence

Studies	Male	Female
Anjana gopi ⁴	88%	12%
Shyam mathur ⁸	90%	10%
Channanna et al ⁵	93.3%	6.67%
Indian journal of surgery ²⁰⁰²	96%	04%
Present Study	89%	11%

Table 25: Analysis of latent period

Onset of disease	Present study	Channanna ⁵	Anjana gopi ⁴	Sumit kapadia, Dipesh et al ⁹
<7days(Acute onset)	Most patients (60%)	26.6%	59%	-
7days-2 months (subacute onset)	37%	63.3%	35%	Most patients
>2months (chronic)	3%	10%	6%	-

Table 26: Analysis of symptoms & signs

Symptoms	Present series	Hyo Min Yoo et al ¹⁰	Green stein et al ¹¹	Chennanna et al ⁵
Pain abdomen	100%	85.0%	84.0%	83.3%
Fever	94.0%	93.0%	95.0%	96.7%
Diarrhoea	16.0%	13.0%	2.0%	20.0%
SIGNS				
RUQ	100%	88.0%	89.0%	83.0%
Tenderness	50.0%	41.0%	39.0%	70.0%
Hepatomegaly				
Jaundice	24.0%	7.0%	34.0%	36.7%

Table 27: Alcoholism in cases of liver abscess

Studies	Alcoholism
Present series	84.0%
Shyam mathur et al ⁸	70%
Anjana gopi ⁴	85%
Channanna et al ⁵	83%

Table 28: Analysis of laboratory investigations

Laboratory investigations	Present series	HYO MIN YOO et al	Chennanna et al
Leucocytosis(>10,000)	79.0%	78.0%	86.6%
ALP(>115 IU/L)	91.0%	55%	76.6%
Albumin(<3.0 gm/dl)	84.0%	68%	40%
Prothrombin time>20s	29.0%	14%	6.6%

Table 29: Pus culture analysis

Studies	E.coli	Klebsiella pneumonia	Enterococcus
Present study	9.45%	17.56%	34.2%
HYO MIN et al	63%	28%	9%
Anjana gopi et al	13.09%	13.09%	23.8%
Khee siang.chin ming et al	2.5%	82.3%	-
Hiroshi okana et al ¹²	-	62%	-

Table 30: Association of diabetes with pla

Studies	Diabetes (RBS>200mg/dl)
Present series	20/30(66.7%)
Steven- Huy.B.Han et al ¹³	65%
World J gastroenterology 200814(13) ¹⁴	83.0%

Table 31: Chest x-ray findings

Chest x-ray findings	D.Lynche, William A. Jensen et al ¹⁵	World J gastro Enterology 2008	Chennanna et al	Present study
Normal	46.0%	58.9%	50.0%	39.0%
Abnormal	54.0%	41.09%	50.0%	61.0%

Table 32: usg findings of liver abscess

Lobar distribution	Present series	WORLD J gastro 2008	Hyo Min yoo et al	Chaturbhul lal rajak ¹⁶	Chennanna et al
Solitaryabscess	70%	76.29%	89.0%	84%	70%
Rt lobe abscess	66%	74.12%	69.0%	72%	63.33%
Lt lobe abscess	4%	12.0	20.0%	12%	6.4%
Multiple abscess	30%	23.7%	11.0%	20%	30%
Size of liver abscess(cms)					
<5cms	56%	34.16%	45%	-	44%
>5cms	44%	65.83%	55%	-	56%

Table 33: Analysis of treatment

Treatment modality	Present series	Chennan et al	Chu Km et al	Hyo Min Yoo et al
Conservative (antibiotics alone)	26%	23.33%	24%	-
Aspiration	30%	30%	42%	79%
Pigtail catheter drainage	32%	40%	27%	-
Laparotomy	12%	6.6%	7%	21%

Out 100 cases 30 patients with abscess <200 cc underwent usg guided percutaneous aspiration. Major controversy arises between aspiration and pig tail catheterisation. Some studies like Hyo min yo et al. where 79% cases underwent aspiration says aspiration is better but presently percutaneous catheter drainage (PCD) by pig tail is becoming more popular with growing interest in management of ALA. Hanna et al. reported in his study of drug resistant ALA that when PCD is combined with antiamoebic therapy, it expedites the recovery and it

is also curative in such cases.

According to RK, Rockey et al. percutaneous catheter drainage combined with intravenous antibiotics was the most common therapeutic modality and resulted in cure in 76% of all cases in which it was used. Compared to 65% with antibiotics alone and 61% with surgery. and PCD with pig tail has been successful in 90% of patients over last 5 years. In this study OCD appeared to result in higher cure rate than aspiration.

Also in a study by sukhjeet singh et al. annals of gastroenterology 2013, prospective randomised comparison of catheter drainage and needle aspirations out of 60 pts 30 pts treated with PCD with 100% effectiveness but 30 pts treated with aspirations only 66% were treated effectively.

In this study PCD drainage and aspirations are in comparison with other recent studies.conclusion is Prompt drainage of abscess is required to prevent progression of sepsis & to bring about successful resolution of symptoms. Laparotomy as initial line of treatment was performed in 12 cases of ruptured liver abscess presented with peritonitis. Which was in comparison with othrer studies.

Surgical management is effective but mortality rate will be high due to systemic involvement and various complications. In this study 3 cases has ruptured in to pleural cavity where icd insertion was done. In 1 case icd was kept to relieve massive right pleural effusion along with pig tail catheterisation for rt lobe abscess. Thus in this study in majority of cases pigtail catheter drainage was done next sub group is aspirations.

HIV Serology

According to this study, liver abscess in HIV positive and HIV negative cases found no important significant difference between cases of liver abscess.

Summary

1. Mean age of presentation of liver abscess was 46 years. The highest incidence occurred in the age group 31-60 years (71%). Males (89%) were more commonly affected than females.
2. Acute onset of symptoms (<7 days) was the commonest mode of presentation (60.0%).
3. Pain abdomen was the most common symptom present in all cases (100%) Fever occurring in 94.0% of cases. Diarrhoea, Hepatomegaly, Jaundice, shock, pleural effusion, basal consolidation were other presenting complaints.
4. This study found the Alcohol as the single most consistent etiological factor in all patients of liver abscess.

Table 34: Analysis of repeat aspirations

Repeat aspirations	Present study	Chaturbhuj lal rajak et al	Sajjad ahmed et al ¹⁷
Single aspiration	83.3%	88.0%	84.0%
Twice aspiration	13.3%	10.0%	16.0%
Thrice aspiration	3.3%	2.0%	-

Table 35: Recurrence and mortality

Parameters	Present study	Chu Km et al	Hyo Min Yoo et al	Khee-Siang, Chin Mint et al
Recurrence	8.0%	10%	9.0%	-
Mortality	6.0%	18%	11.0%	6.5%

Table 36: Complications

Studies	Complications
Present study	12%
Hyo Min Yoo et al	59%

Table 37: Factors predictive of complicated liver abscess

Present study	LEE et al(1991)	Chou et al
Clinical jaundice	Clinical jaundice	Age>60
Pleural effusion	Pleural effusion	Gas forming abscess
Left lobe abscess	Bilobar abscess	Rupture of abscess
Albumin <2.0 g/dl	Albumin<2.5g/dl	Bilobar abscess
S.bilirubin>2.4mg/dl	Bilirubin>2mg/dl	Clinical sepsis
AST>50 IU/L	AST>100IU/L	Bilirubin >2mg/dl
Alkaline phosphatase>300IU/L	Alkaline phosphatase>150IU/l	Urea nitrogen>20mg/dl
Leukocytosis>20,000/mm ³	Leucocytosis>20,000/mm ³	Creatinine>2mg/dl
Alcoholism>10years		AST>100IU/L
Elevated prothrombin time(>20sec)		Albumin<2.5g/dl
RBS>200mg/dl		

Table 38: Aetiological factors

Aetiology	Present study	Anjana gopi et al	Hyo Min Yoo et al
Amoebic			
Cryptogenic	97.1%	90.17%	81.0%
portal	2.1%	9.0%	19.0%
Pyogenic			
Biliary	13.3%	22%	51%
Haematogenous	13.33%	16%	3.0%
cryptogenic	73.3%	62%	38.0%

5. Raised WBC count (>20,000 cells/cu.mm), Alkaline phosphatase level (>300 IU/l), Diabetes, Hypoalbuminaemia (<2.0mg/dl), Prolonged Prothrombin time (>20 sec) were considered as the predictive factors of complicated (Ruptured) liver abscess in our study.
6. Out of these 74 cases, 44/74 cases had 'Anchovy sauce' appearance (suggestive of Amoebic aetiology) of the pus which revealed no growth, giving this a percentage of 59.45%. While growths were obtained in 30/74 (40.54%) of these cases. E.coli was isolated in 7/74 (9.45%) of cases and Klebsiella pneumoniae was isolated in 9/74 (17.56%) of the cases, and Enterococcus in 13/74 (34.2%) patients and in one case Staphylococcus aureus. So Enterococcus was the most common organism isolated in pyogenic liver abscess and 59.45% patients had no growth (Amoebic liver abscess)
7. Out of the total 100 cases in this study, cases who had multiple small abscesses and solitary abscesses < 100 cc were managed conservatively. 26/100 (26.0%) were managed conservatively but recurrences noted.
8. While 30/100 (30%) were subjected to percutaneous aspiration, 32 cases underwent PigTail Catheter Drainage, 12/100 (12.0%) required Laparotomy and Drainage along with (3/100, 3%) required ICD insertion for rupture into pleural cavity.
9. Patients were followed up once monthly for 3 months and thereafter once in six months repeat USG scan were done as indicated.
10. Recurrences were noted in 8/100 (08%) of cases in Conservative & aspiration management group. Out of 30 cases 25 cases underwent single aspiration, 4 cases underwent twice aspiration and 1 case underwent thrice aspiration. 32 cases underwent Pigtail catheter drainage under USG guided as abscess cavity was big and not completely liquefied (In our study size of abscess cavity was >5cms)
11. Cryptogenic was the most common aetiology in Amoebic liver abscess (97.1%) and Pyogenic liver abscess (73.3%).
12. Peritoneal rupture (21.0%) was the most common complication associated with Liver abscess.
13. HIV serology was done in all patients of liver abscess

in this study to investigate the relationship between immunocompromised state and liver abscess. However, this study found only 3/100 (3.0%) of cases to have positive anti HIV serology.

14. Mortality occurred in 6 cases in our study.

Conclusion

Liver abscess is a very common condition in India. India has 2nd highest incidence of liver abscess in world. Liver abscesses occurred most commonly between 30-60 years males. Pain abdomen, fever are consistently occurring symptom. Alcohol consumption was the single most important etiological factor for causation of liver abscesses. Alkaline phosphatase is the most consistently elevated among all Liver Function Tests. Raised WBC count, Alkaline phosphatase level, Diabetes, Hypoalbuminaemia, Prolonged Prothrombin time were considered as the predictive factors of complicated (Ruptured) liver abscess in this study. Diabetes mellitus was more frequently associated condition in cases of liver abscess and especially Pyogenic liver abscess cases.

Liver abscess usually present as a solitary abscess most commonly in the right lobe of liver. Enterococcus was the most common organism isolated in pyogenic liver abscess. Patient management depends on number and size of abscess. Cryptogenic was the most common aetiology in Amoebic liver abscess as well as in Pyogenic liver abscess. Peritoneal rupture was the most common complication associated with Liver abscess. Mortality was seen in 6 cases in this study.

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