STUDY OF CLINICAL AND ETIOPATHOLOGICAL PROFILE OF LIVER ABSCESS
Dharmendra Tiwari, O. P. Jatav, Maneesh Jain, Sangeeth Kumar

HOW TO CITE THIS ARTICLE:
Dharmendra Tiwari, O. P. Jatav, Maneesh Jain, Sangeeth Kumar. “Study of Clinical and Etiopathological Profile of Liver Abscess”. Journal of Evidence based Medicine and Healthcare; Volume 2, Issue 40, October 05, 2015; Page: 6705-6712, DOI: 10.18410/jebmh/2015/915

ABSTRACT: BACKGROUND: Liver abscess is a common problem in lower socio-economic group in India. Both types (Amoebic and pyogenic) of liver abscesses are important cause of morbidity and mortality in India. AIM: To observe the clinical features, biochemical and radiological abnormality, microbiological etiologies, and management outcomes in patients with liver abscess. MATERIALS AND METHODS: An open prospective study was conducted in the Department of Medicine, GR Medical College and JA Group of Hospitals, Gwalior from November 2009 to October 2011. The patients presenting with Liver abscess on ultrasonography (USG) were included. A detailed history, clinical examination, and laboratory profile of the patients were recorded. Radiological examination was also done to observe any pulmonary complication along with USG to observe size, site, number, echogenicity and other abnormalities. Effects of antibiotic and surgical intervention (USG guided aspiration or pigtail insertion) were also studied. RESULTS: A total of 104 patients were included in the study, out of which 52 were males. Most of them were from lower socioeconomic class (61.19%) and alcoholic (68.62%). Most patients presented with fever and abdominal pain. Most of the patients in amoebic liver abscess (ALA) group were of <40 years of age and in pyogenic liver abscess (PLA) >40 years of age. Liver abscess was mostly present in right lobe (65.67%) and single (59.70%). Etiology of abscess was 58.2% amoebic, 41.8% pyogenic. Diabetes mellitus and cholelithiasis were main inclining factors in case of liver abscess. Most common laboratory finding was abnormal alkaline phosphatase. All patients with ALA & 26 out of 29 patients with PLA improved with medical therapy. CONCLUSIONS: The most common presentation for liver abscess was male, alcoholic of low socioeconomic class having right lobe single abscess.

KEYWORDS: Aspiration; Amoebic liver abscess; Pyogenic liver abscess.

INTRODUCTION: Liver is at constant risk of getting infected from systemic viral, bacterial, fungal, parasitic or mixed infections. Any such infection can lead to accumulation of pus containing material in liver parenchyma called as Liver Abscess (LA). The two most common liver abscesses are amoebic and pyogenic. In developing countries like India LA is mostly amoebic where Entamoeba Histolytica is endemic. Incidence of liver abscess in India is second highest compared to whole world.

Pyogenic abscesses are rate but potentially dangerous and are more common in developed world. PLA can originate from hematogenous or contiguous spread of bacterial infection from local site. PLA’s are mostly polymicrobial and common organisms involved are Escherichia Coli (E Coli), Klebseila, Proteus, Pseudomonas, Streptococcus Species, and anaerobes like Fusobacterium and Bacteroides species. PLA’s are cryptogenic in around 15–55% of cases as no cause can be found in them.
ALA is most common extra intestinal site of amoebic infection, more common in males and affects people between the age group of 20 to 40 years commonly. ALA’s are mostly solitary and mainly located in right lobe whereas PLA’s are mostly multiple. Most common presenting complains of patients are fever, abdominal pain in right upper quadrant, hepatomegaly with or without jaundice.

The present study aimed to observe the clinical features, biochemical and radiological abnormality, microbiological etiologies, and management outcomes in patients with liver abscess.

MATERIALS AND METHODS: It was an open prospective study conducted at the Department of Medicine, GR Medical College and JA Group of Hospitals, Gwalior from November 2009 to October 2011. Total of 104 patients diagnosed as having LA on USG with age more than 14 years were included in the study after taking informed written consent from all patients. Patients with hydatid cyst and metastatic or primary malignant neoplasm of liver were excluded from the study.

A detailed history (including presenting complaint, alcoholism and immune history), clinical examination, and laboratory profile of the patients were recorded on a predesigned performa. All patients were subjected to complete hemogram, special tests like hepatitis B surface antigen (HBsAg), human immunodeficiency virus (HIV) and pus aspiration for culture and sensitivity was done.

Pus aspiration from liver abscess was possible in 67 patients and on the basis of etiological diagnosis; they were sub grouped into amoebic liver abscess (39) and pyogenic liver abscess (28). The patients where aspiration could not be done due to some reason were grouped as Not Aspirated Group (37). Radiological examination was also done to observe any pulmonary complication along with USG to observe size, site, number, echogenicity and other abnormalities. Effects of antibiotic and surgical intervention (USG guided aspiration or pigtail insertion) were also studied.

Statistical analysis was done using epimax calculator. Pearson chi square test was used for non-normal distribution. P value of < 0.05 was considered to be significant.

RESULTS: Out of 104 patients, 67 gave consent for diagnostic aspiration. Out of these 67 patients, 39(58.2%) were having ALA and 28 (41.8%) had PLA. The distribution of various parameters in both the groups is shown in table 1.

The common presenting symptoms of all the patients are shown in table 2. Hematological finding revealed that out of 67 patients, 43(64.17%) had Hb <10gm%. In ALA 25(64.10%) had Hb <10 gm% whereas in PLA 18 (64.28%) had Hb <10 gm%.

Organism culture in PLA group showed that E. coli, Staphylococcus aureus, Streptococcus pyrogens, Klebsiella, Mycobacterium and mixed culture was present in 11(39%), 3(10%), 1(3.5%), 3(10%), 1(3.5%) and 9(32.1%) patients respectively. In ALA group, in all patients E. histolytica was isolated.

In Present study, 25(64.10%) of ALA patients were managed conservatively (Intravenous (IV) metronidazole 400 mg 8 hourly for 10 days) and 11(35.9%) patients required percutaneous aspiration. In PLA group, 15(53.57%) were managed conservatively (IV ceftriaxone 1gm 12
hourly and IV clindamycin 600 mg 8 hourly for 10 days) and 11(46.4%) patients required percutaneous aspiration (Table 3).

Hospital stay data revealed that in ALA group patients stayed for 14 and 11 days, who were treated with only antibiotic and patients treated with aspiration along with antibiotics respectively. In PLA group, patients stayed for 16.5 and 10.5 days, who were treated with only antibiotic and patients treated with aspiration along with antibiotics respectively.

In ALA group, all patients improved where as in PLA group there were 2 (11.6%) deaths. Among mortality, one patients had cirrhosis with multiple abscesses and second had diabetes mellitus, cholelithiasis with multiple abscesses.

In non-aspirated (37) group, 21 (56.7%) had single abscess in which 17(80.69%) were males, whereas among 16(43.3%) multiple abscess patients, 9(56.25%) were males. Out of 21 non aspirated patients with single abscess, 16(76.19%) were of age <50 years and 5(23.8%) were of >50 years of age whereas out of 16 multiple abscesses patients, 10(62.5%) were of age <50 years and 6(37.5%) were of age >50 years. The comparison of sign and symptoms in aspirated and non-aspirated group are shown in table 4. All 37 patients in not aspirated group were managed empirically. In single abscess patient antiprotozoal drug (metronidazole 400 mg 8 hourly) was given while in multiple abscesses patient antibiotics (IV ceftriaxone 1 gm 12 hourly and IV clindamycin 600 mg 8 hourly) was given.

DISCUSSION: In present study, out of 104 LA patients 67 gave consent for diagnostic aspiration. In present study amoebic abscess (58.2%) was more common than pyogenic abscess (41.8%). This has been reported by various other studies from our part of the country. Reason may be unhealthy living condition, excessive crowding and unsanitary practices which can leads to contamination of food and drinks which are responsible for the transmission of amoeba.4

The present study showed statistically significant (p=0.0038) male predominance between ALA and PLA. The results are quite similar to Shrestha and Agu et al.5,6 LA can develop at any age, but different studies have shown that ALA is most frequently seen in age group of 20-40 years while PLA is most common after the 5th decade of life. In our study ALA (92.3%) was more in patients < 40 years of age whereas PLA (82.1%) was more in patients >40 years of age. This is similar to the findings of Singh et al who found ALA between 31-40 years and Hathila et al found age of 50-59 years for PLA and 30-39 years for ALA.3,7 Present study has shown that liver abscess is mostly seen in illiterate or below high school labourer group (56.7%) compared to patients who had high school certificates (27.5%).

Alcohol is thought to play important role in the etiology of LA.1 In our study, 64.10% male patients of ALA and 58.8% male of PLA were having history of alcohol ingestion. It may be due to inhibition of kupffer cells function which is specialized macrophage in liver which play very important role in clearing amoeba.1

LA occurs more frequently in elderly with co-morbid conditions like DM, cholelithiasis, cholangitis, immune compromised status and cirrhosis. Co-morbid conditions are also associated with increased mortality. DM and cholelithiasis were the most common co-morbidity present in our study; it was 50% and 35.7% in PLA and 20.51% and 23% in ALA respectively. Thomsen et al found that diabetic patients had a 3.6-fold increased risk of developing PLA, compared with control subjects.8
The most common presenting complaint among the liver abscess patients were fever (92.3% in ALA and 71.42% in PLA) and abdominal pain (89.74% in ALA and 71.42% in PLA). Agu et al has also shown that in 91.3% patients of ALA fever and abdominal paid were the common presentations. Singh S et al also showed 88% of study patients to have fever as most common presenting symptom.

In present study most common sign on per abdominal examination was right quadrant tenderness (65%). These finding are quite consistence with previous studies of Singh et al who found 93% of cases with right quadrant tenderness.

In our study biochemical finding revealed that there was no significant relationship between two groups in having Hb<10 mg/dl and WBC count. In our study alkaline phosphatase level was elevated in ALA (66.6%) and PLA (75%), which suggest that elevated level of alkaline phosphatase is a most common abnormal finding in LA which is similar to the findings of previous workers.

USG data revealed that single abscess was most common with ALA (84%) compared to PLA (25%) whereas opposite trend was seen with multiple abscess, it was mostly associated with PLA (75%) compared to ALA (16%). Singh et al observed three quarters of the cases to have solitary liver abscess cavity.

Analysis of location of LA with respect to causes showed that in both the groups abscess’s were commonly present in right lobe. Similar results were shown by Ghosh et al and Singh et al. Left lobe was involved more commonly in PLA (28.5%) compared to ALA (10.2%). In present study ALA (57.8%) was mostly of >10 cm in size while PLA (71.7%) was mostly 5-10 cm in size.

Chest x-ray abnormality including consolidation, effusion and elevated diaphragm were not statistically significant between the groups.

In present study microbiological diagnosis found that in PLA most common organism was E. coli (40%). 64.1% patients of ALA were treated by specific anti-amoebic drug alone while 33% patients were treated by combination of specific drug and percutaneous drainage. In PLA 46.4% patients were treated by specific antibiotic drug alone while 53.6% were treated by combination of specific drug and percutaneous drainage.

In present study, patients who were treated with aspiration along with antibiotic stayed for a shorter duration (11 days) in hospital as compared to patients treated only with antibiotics (16 days).

Comparison between aspirated and not aspirated group showed that those patients having single and right sided abscess mostly resemble ALA and those having multiple and left sided abscess resemble PLA. In our study not aspirated patients improved after empirical treatment in single abscess (81.2%) and multiple abscesses (79%).

To conclude results of our study including clinical and etio-pathological profile of liver abscess are consistent with previous literature. ALA is more common than PLA and most of the LA’s can be managed conservatively. The results of not aspirated group showed that presumptive diagnosis based on the clinical features is reliable and if diagnostic aspiration is not possible, treatment can be instituted on the basis of clinical and sonographic presentation.
REFERENCES:

1. Ghosh S, Sharma S, GADpayle AK, Gupta HK, Mahajan RK, Sahoo R, et al. Clinical, Laboratory, and Management Profile in Patients of Liver Abscess from Northern India. J Trop Med 2014; 2014: 142382.

2. Mittal A, Kanojiya R, Tantia R, Dutt SC. A Comparative Study of Factors Affecting Outcome of Various Modalities of Treatment In Liver Abscess our Experience of 100 Cases. International Journal of Medical and Applied Sciences 2014; 3(3): 264-78.

3. Hathila TN, Patel CJ, Rupani MP. A Cross-Sectional Study of Clinical Features and Management of Liver Abscesses in a Tertiary Care Hospital, Ahmedabad, Gujarat. National Journal of Medical Research 2014; 4(3): 250-2.

4. Siddiqui MNA, Ahad MA, Ekram ARMS, Islam QT, Hoque MA, Masum QAAI. Clinico-pathological Profile of Liver Abscess in a Teaching Hospital. TAJ 2008; 21(1): 44-9.

5. Huang C. Pyogenic hepatic abscess: changing trends over 42 years. Ann Surg 1996; 223: 600-9.

6. Shrestha SK1, Joshi R, Dongol UM, Singh DR, Sharma SK. Management of liver abscess at teaching hospital. J Nepal Health Res Counc [Internet] 2011; 9(1): 17-20. Available from: http://www.ncbi.nlm.nih.gov/pubmed/22929706

7. Agu KA. Liver Abscess in an Endemic Area: a 6-year review of cases. Adv. Biores 2014; 5(3): 29-32.

8. Singh S, Chaudhary P, Saxena N, Khandelwal S, Poddar DD, Biswal UC. Treatment of liver abscess: prospective randomized comparison of catheter drainage and needle aspiration. Annals of Gastroenterology 2013; 26: 1-8.

| Parameters          | ALA(39) | PLA(28) | Total(67) |
|---------------------|---------|---------|-----------|
| Age(years)          |         |         |           |
| <40                 | 36(92.30) | 5(17.85) | 39(58.20) |
| >40                 | 3(7.69)  | 23(82.14) | 26(38.80) |
| Gender              |         |         |           |
| Male                | 34(90.1) | 17(60.7) | 51(77.61) |
| Female              | 5(9.9)   | 11(39.3) | 16(23.88) |
| Education           |         |         |           |
| Illiterate/Below HS | 27(69.23) | 11(39.28) | 38(56.7) |
| HC                  | 10(25.64) | 14(50)   | 24(27.5) |
| Graduate/PG         | 2(5.8)   | 3(10.71)  | 4(5.97)  |
| Occupation          |         |         |           |
| Govt. Service       | 2(44.4)  | 5(29.4)   | 7(40.44) |
| Labourer            | 19(55.8) | 8(47.5)   | 27(40.29) |
| Farmer              | 11(32.3) | 3(17.6)   | 14(20.2) |
| Other               | 9(23.07) | 12(42.85) | 21(31.34) |
| Alcohol addiction   | 25(73.52) | 10(58.82) | 51(76.11) |
| Co-morbid Illness   |         |         |           |
| DM                  | 8(23.5)  | 14(50)   | 22(32.8) |
| Cholelithiasis      | 9(23.07) | 10(35.71) | 19(28.53) |
| Cholangitis         | 1(2.94)  | 7(25)    | 8(14.2)  |
| CLD                 | 4(11.76) | 3(17.64) | 7(11.8)  |
| Others              | 10(25.61) | 2(7.14)  | 12(18.28) |
| Signs               |         |         |           |
| RQT                 | 26(66.66) | 18(64.28) | 44(65.67) |
| Hepatomegaly        | 23(58.97) | 17(60.71) | 4(54.70) |
| Splenomegaly        | 10(25.64) | 9(32.14)  | 19(28.55) |
Table 1: Distribution of different parameters Between ALA and PLA

| Parameters                | ALA | PLA | Total |
|---------------------------|-----|-----|-------|
| **TLC**                   |     |     |       |
| Normal *                  | 21(53.84) | 8(28.57) | 32(47.76) |
| Increased                 | 18(46.15) | 20(71.42) | 35(52.23) |
| **Alkaline Phosphatase #**|     |     |       |
| Normal                    | 13(33.33) | 7(25) | 20(29.85) |
| Increased                 | 26(66.66) | 21(75) | 47(70.14) |
| **No of Abscess**         |     |     |       |
| Single                    | 33(84.61) | 7(25) | 40(59.70) |
| Multiple                  | 6(15.38) | 35(89.74) | 27(30.30) |
| **Abscess size(cm)**      |     |     |       |
| <5                        | 2(5.88) | 1(5.88) | 3(4.47) |
| 5-10                      | 15(38.46) | 20(71.42) | 35(52.23) |
| > 10                      | 22(56.41) | 7(25) | 29(43.28) |
| **Lobe Involved**         |     |     |       |
| Right                     | 30(76.92) | 14(50) | 44(65.67) |
| Left                      | 4(11.76) | 8(28.57) | 12(17.91) |
| Both                      | 5(12.8) | 6(21.42) | 11(16.41) |
| **X-Ray Finding**         |     |     |       |
| Normal                    | 25(64.10) | 14(50) | 39(58.2) |
| Abnormal                  | 14(35.89) | 14(50) | 28(41.8) |

*Data are expressed as number of patients (%). Normal TLC (4000 to 11000 cells/mm3), Normal and Increased level of alkaline phosphatase is 44 to 147 IU/L and >150 IU/L respectively. Right Quadrant Tenderness; RQT, Abdominal Pain; AP, Chronic liver disease; CLD, Diabetes Mellitus; DM, Post Graduate; PG, Higher Secondary; HC, High School; HS, Amoebic Liver Abscess; ALA, Pyogenic Liver Abscess; PLA

Table 2: Distribution of symptoms in Liver Abscess

| Symptoms       | ALA       | PLA       | Total |
|----------------|-----------|-----------|-------|
|                | Male (N=34) | Female(N=5) | Male (N=17) | Female(N=11) | (N=67) |
| Fever          | 31(91.17)  | 5(100)    | 13(76.4) | 7(63.63) | 56(83.4) |
| Abdominal Pain | 30(88.23)  | 5(100)    | 12(70)  | 8(72.72) | 55(82) |
| Malaise        | 26(76.47)  | 4(80)     | 15(88.23)| 7(63.63) | 52(77.7) |
| Weight Loss    | 19(55.88)  | 3(60)     | 5(29.41)| 4(36.36) | 31(46.26) |
| Nausea/Vomiting| 23(67.64)  | 3(60)     | 9(52.94)| 8(72.72) | 43(64.17) |
| Diarrhoea      | 11(32.35)  | 2(40)     | 1(5.88) | 0(0)    | 14(20.89) |
| Cough          | 6(17.64)   | 1(20)     | 4(23.52)| 1(18.18)| 13(19.4) |

*Data are expressed as number of patients (%). Amoebic Liver Abscess; ALA, Pyogenic Liver Abscess; PLA, number of patients; N.
Table 3: Treatment plan for liver abscess

| Sl. No | Treatment                  | ALA Male (N=34) | ALA Female (N=5) | PLA Male (N=17) | PLA Female (N=11) | Total (N=67) |
|--------|----------------------------|----------------|------------------|-----------------|-------------------|--------------|
| 1      | Medically                  | 21(61)         | 4(80)            | 9(52)           | 6(54.5)           | 40(59.7)     |
|        |                            |                |                  |                 |                   |              |
| 2      | Surgical                   |                |                  |                 |                   |              |
|        | Per cutaneous drainage     | 10(29)         | 1(20)            | 6(35.2)         | 5(36.36)          | 22(32.8)     |
|        | Pigtail insertion          | 3(8.8)         | 0(0)             | 2(11.7)         | 0(0)              | 5(7.4)       |

*Data are expressed as number of patients (%). Amoebic Liver Abscess; ALA, Pyogenic Liver Abscess; PLA, number of patients; N.

Table 4: Comparison of clinical feature between aspirated and non-aspirated patients

| Features                  | Aspirated (N=67) | Not aspirated (N=37) |
|---------------------------|------------------|-----------------------|
|                           | ALA (N=39)       | PLA (N=28)            | Single (N=21) | Multiple (N=16) |
| Fever                     | 36 (92.3)        | 26(92.8)              | 17(80.9)     | 15(93.7)        |
| Abdominal Pain            | 35(89.7)         | 23(82.14)             | 17(80.9)     | 14(87.5)        |
| Malaise                   | 30(76.92)        | 22(78.57)             | 15(71.4)     | 14(87.5)        |
| Weight loss               | 22(56.4)         | 9(32.14)              | 11(52.3)     | 10(62.5)        |
| Nausea/vomiting           | 26(66.6)         | 17(60.7)              | 16(76.1)     | 13(81.2)        |
| Diarrhea                  | 13(33.3)         | 2(71.4)               | 10(47.61)    | 3(18.75)        |
| Cough                     | 7(17.94)         | 2(71.4)               | 2(9.5)       | 6(37.50)        |
| Icterus                   | 16(41.0)         | 13(46.4)              | 9(42.8)      | 7(43.5)         |
| Right quadrant tenderness | 26(66.7)         | 18(64.2)              | 16(76.1)     | 12(75)          |
| Liver enlargement         | 23(58.97)        | 17(60.7)              | 11(52.3)     | 7(43.75)        |

*Data are expressed as number of patients (%). Amoebic Liver Abscess; ALA, Pyogenic Liver Abscess; PLA, number of patients; N.
AUTHORS:
1. Dharmendra Tiwari
2. O. P. Jatav
3. Maneesh Jain
4. Sangeeth Kumar

PARTICULARS OF CONTRIBUTORS:
1. Assistant Professor, Department of Medicine, G. R. Medical College, Gwalior, Madhya Pradesh, India.
2. Professor & HOD, Department of Medicine, G. R. Medical College, Gwalior, Madhya Pradesh, India.
3. Ex Resident, Department of Medicine, G. R. Medical College, Gwalior, Madhya Pradesh, India.
4. Resident, Department of Medicine, G. R. Medical College, Gwalior, Madhya Pradesh, India.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Dharmendra Tiwari, Jawahar Colony, Gwalior, Madhya Pradesh.
E-mail: drdtiwari7@yahoo.com

Date of Submission: 17/09/2015.
Date of Peer Review: 18/09/2015.
Date of Acceptance: 22/09/2015.
Date of Publishing: 30/09/2015.