International Surgery Journal
Narwade N et al. Int Surg J. 2018 Apr;5(4):1382-1387
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20181115

Original Research Article

What is the recent trend in the clinical study of liver abcess cases?

Nandhkishore Narwade, Abhijit Bagul, Naseem Khan, Sridevi Murali*, Rahul Borude, Aniket Ray, Yashraj Shah

Department of General Surgery, DY Patil School of Medicine, Navi Mumbai, Maharashtra, India

Received: 29 January 2018
Accepted: 06 March 2018

***Correspondence:**
Dr. Sridevi Murali,
E-mail: sridevimuralisg@yahoo.co.in

ABSTRACT

Background: Liver abscesses commonly occur secondary to biliary or intestinal tract infections, haematogenous seeding or extension of contiguous infection, and carry a mortality rate of 20-60% even with appropriate medical-surgical management. The aims of the study were to study the current prevelence of etiological factors in cases of liver abscess, to study clinical presentations in cases of liver abscess and study outcomes of the current trend in investigations and outcomes of the modes of treatment in cases of liver abscess.
Methods: 50 patients with the diagnosis of liver abscess belonging to various age groups and socio-economic status are included in the study. Written consent and a pre designed proforma was taken from all the patients and to collect relevant data form the patients included in the study.
Results: In our study of 50 cases of liver abscess age ranges from 16 to 65, with majority of patients being in young age group (14-34 years). The median age for our study of liver abscess is 31. In our study, there were number of males 41 (82%) greater than females 9 (18%). In our study, right hypochondrium pain 12 cases (24%) was the most common presenting symptom among all liver abscess.
Conclusions: Percutaneous aspiration along with medical management yields far better results. Ultrasonography is the most important recommended tool for the initial diagnostic investigation in liver abscess cases with percutaneous aspiration and pigtailing. Hence the prognosis of liver abscess has been improved with different advanced modalities in the management of liver abscess with less or no mortality except in patients with malignant disease.

Keywords: Amoebic liver abscess, Pyogenic liver abscess, Per cutaneous aspiration, Pig Tailing

INTRODUCTION

Hepatic abscesses are classified as those of bacterial origin or by Entamoeba-histolytica but modern times have seen a major shift in etiology of pyogenic abscesses in the liver.[1] This remains a serious condition with high morbidity and mortality, despite advances in diagnostic and therapeutic modalities. Liver abscesses commonly occur secondary to biliary or intestinal tract infections, haematogenous seeding or extension of contiguous infection, and carry a mortality rate of 20-60% even with appropriate medical-surgical management. The most common presenting clinical symptoms are abdominal pain, fever, nausea, vomiting, loss of appetite and jaundice. These symptoms are variable depending upon size of abscess, general health of the patient, associated chronic diseases and complications, poor hygiene, contaminated drinking water, malnutrition, hepatic dysfunction, low host resistance, alcohol intake, delayed or inadequate treatment are all responsible for the disease in the low socio economic group. Liver abscesses usually occur in older, more debilitated patients, often in the setting of malignancy. The incidence of pyogenic liver abscess is on the rise. The majority of large series published over the past 20 years cite biliary disorders as the most common identifiable source of the hepatic

abscesses.[2-5] Although there are no definitive studies, host factors that can weaken the immune system are thought to predispose to liver abscess formation especially mycobacterial and fungal (e.g. cirrhosis, diabetes, or malignancy).[6] In general, portal, traumatic, and cryptogenic hepatic abscesses are solitary and large, while biliary and arterial abscesses are multiple and small.[4] Diabetes has been cited in numerous studies as a possible predisposing factor.[7] Amoebiasis is a relatively common parasitic infection caused by the protozoan E. histolytica with the highest incidence in tropical climates in Mexico, India, East and South Africa, and Central and South America.[8] Cryptogenic abscesses, those of unknown etiology, occur in 10–45% of patients, depending on the aggressiveness of investigation used to define the source.[1] *Escherichia coli*, *Klebsiella* species, *enterococci*, and *Pseudomonas* species are the most common aerobic organisms cultured in recent series.[9,10] Whereas *Bacteroides* species, *anaerobic streptococci*, and *Fusobacterium* species are the most common anaerobes.[11] *Klebsiella pneumonia* is extremely prevalent in liver abscesses in Asian countries as well as in predominantly Asian population in the Western world for unclear reasons.[12] Mycobacterium tuberculosis is a common infecting organism in the acquired immune deficiency syndrome.[13]

Radio-imaging techniques like USG and CT are the modalities of choice for investigation purposes. Treatment modalities of these abscesses, first emphasizes on medical treatment, but if it is unsuccessful then only surgical intervention should be considered.[12] Confirmation of pyogenic liver abscess involves aspiration of the abscess as well as positive blood cultures whereas, amoebic serology is both a highly sensitive and specific test in identifying patients with amebic infection, thus aiding in differentiation between pyogenic and amoebic hepatic abscess.[14-16] The practice of most authors is to reserve surgical intervention for those patients failing less invasive management, patients with complications of amoebic hepatic abscess, and those patients with large left sided abscesses not amenable to catheter-based drainage that are posing a risk of rupture into the pericardium.[16]

Aims and objectives

- To study the current etiological factors in cases of liver abscess.
- To study clinical presentations in cases of liver abscess.
- To study outcomes of the current trend in investigations and outcomes of the modes of treatment in cases of liver abscess.

METHODS

This is a descriptive and prospective clinical study of 24 months.This study was conducted in Dr. D.Y. Patil hospital and research centre, Nerul.

Duration

During a period from 1/6/2013 to 31/11/2015.

Number of groups to be studied

Patient with diagnosis of liver abscess getting admitted in General surgery, general medicine and gastroenterology ward within above period. (50 patients). Patients belonging to various age groups and socio-economic status are included in the study. Written consent was taken from all the patients who participated in the study. A pre designed proforma was used to collect relevant data form the patients included in the study.

Inclusion criteria

Inclusion criteria were all cases of liver abscess diagnosed clinically and/or ultrasonographically; all cases of bacterial and parasitic liver abscess; all cases in evolving, liquefied & ruptured stage with or without peritonitis; all cases of clinical liver abscess with elevated total leucocyte count(TLC), LFT, Increased Prothrombin time and/or serologically amoebic antigen positive; all cases of Diagnosed Liver Abscess being reffered to D.Y. Patil Hospital.

Exclusion criteria

Exclusion criteria were patients of age group below 12 years; pregnant females; jaundiced patients.

Sample size

In present dissertation it is proposed to analyze the detail case study of liver abscess patients seen in casualty, OPD and IPD at D.Y. Patil Hospital and research centre, Navi Mumbai.

Describe study procedure/ data collection method

Patients following up in surgery OPD, Casualty and admitted with liver abscess are included in the study.

Method for statistical analysis.

Ethical consideration

Approval of Institutional Ethics Committee will be taken before start of the study. A written signed informed consent will be taken prior to enrolling the subject in the study.

In all cases a detailed history will be taken and clinical examination was done and data was recorded as per protocol attached after informed written consent. All relevant investigations were done as per protocol. Ultrasound abdomen was done. Abscess cavity in relation to the region of liver, number, size and volume of the abscess was noted.

Abscess of size more than 5cm and found liquefied/ non Liquefied was aspirated as much as possible and aspirate was sent for pus culture and sensitivity. Hemoglobin, RBS,creatinine, total leukocyte count, differential count, liver profile, ELISA for Entamoeba histolytica and stool for Entamoeba histolytica cyst.

Patients were started on appropriate antibiotics based on pus culture sensitivity report and ELISA report and patients were observed for clinical response to treatment and treated with medicine alone or in combination therapeutic aspiration

RESULTS

The present study includes 50 patients, attending DY Patil Hospital and Research Center, Nerul, Navi Mumbai. In present study 50 cases were evaluated for liver abscess. For all cases USG guided pigtailing for tappable liver abscess was done and per cutaneous aspiration (PCA) with medical management for non-tappable liver abscess cases was done.

Table 1: Histogram of age.

Age range (years)	No of cases (%)
14-20	11 (22)
21-27	10 (20)
28-34	10 (20)
35-41	05 (10)
42-48	08 (16)
49-55	03 (06)
56-62	02 (04)
63-70	01 (02)
Total	50 (100)

In our study of 50 cases of liver abscess age ranges from 16 to 65, with majority of patients being in young age group (14-34 years). The median age for our study of liver abscess is 31.

Table 2: Gender distribution.

Gender	No of cases (%)
Male	41 (82)
Female	9 (18)
Total	50 (100)

In our study, there were number of males 41 (82%) greater than females 9 (18%).

In our study, right hypochondrium pain 12 cases(24%) was the most common presenting symptom among all liver abscess cases followed by other symptoms like right hypochondrium associated with fever and vomiting was second most presenting complaint in 10 cases (20%), epigastric pain in 8 cases (16%), epigastric pain with vomiting in 7 cases (14%), right hypochondrium pain associated with fever in 7 cases (14%), generalized abdominal pain in 7 cases (14%) and one case (2%) of generalized abdominal pain associated with vomiting.

Table 3: Presenting symptoms (constitutional symptoms).

Presenting symptoms	No of cases (%)
Right hypochondrium pain	12 (24)
Right hypochondrium pain/fever/vomiting	10 (20)
Epigastric pain	08 (16)
Epigastric pain /vomiting	07 (14)
Right hypochondrium pain/fever	07 (14)
Generalized abdominal pain	05 (10)
Generalized abdominal pain/vomiting	01 (02)
Total	50 (100)

Table 4: Etiological factors.

Etiological factors	No of cases (%)
Contaminated drinking water	26 (52)
Poor hygiene	21 (42)
Alcoholic	3 (6)
Total	50 (100)

In our study, drinking contaminated water 26 cases (52%) was the most common cause for liver abscess followed by poor hygiene 21 cases (42%) as the second most common cause for liver abscess and Alcohol as in 3 cases (6%) of total liver abscess cases.

Table 5: Usg findings.

Ultrasonography Findings	No of cases(%)
Right lobe liver abscess	47 (94)
Left lobe liver abscess	3 (6)
Total	50 (100)

In our study, right lobe liver abscess was maximum and commonly diagnosed liver abscess with ultrasonography in 47 cases (94%) of liver abscess cases and only 3 cases (6%) were diagnosed with ultrasonography as Left lobe liver abscess.

Table 6: Tapable liver abscess.

Tapable liver abscess	No of cases (%)
Yes	32 (64)
No	18 (36)
Total	50 (100)

In our study, out of total 50 cases (100%) 32 cases (64%) were tapple under ultrasonography guidance and 18 cases (36%) were not tappable.

Table 7: Types of management.

Types of management	No of cases (%)
Medical and percutaneous aspiration	34 (68)
Pig tailing	18 (32)
Total	50 (100)

In our study, 34 cases (68%) were managed with medical and percutaneous aspiration and in rest 18 cases (32%) ultrasonography guided pigtailing was done.

Table 8: Pus report.

Pus report	No of cases (%)
Entamoeba histolytica	24 (48)
Escherichia coli	18 (36)
Klebsiella	5 (10)
No organisms	3 (6)
Total	50 (100)

In our study, pus report showed *Entamoeba* histolytica in 24 cases (48%) and 18 cases (34%) did not show any organism in pus report followed by 5 cases (10%) as *Escherichia Coli* and 3 cases (6%) as *Klebsiella* in pus reports.

Table 9: Stool report.

Stool report	No of cases (%)
Cyst not seen	35 (70)
Cyst seen	15 (30)
Total	50 (100)

In our study, stool examination report showed cyst in 15 cases (30%) whereas 35 cases (70%) of stool report did not show any cyst.

Table 10: Final diagnosis.

Diagnosis	No of cases(%)
Amoebic liver abscess	39 (78)
Pyogenic liver abscess	11 (22)
Total	50 (100)

In our study, out of 50 cases of liver abscess 39 (78%) cases were diagnosed as amoebic liver abscess and 11 (22%) cases were diagnosed as pyogenic liver abscess.

DISCUSSION

In our study of 50 cases of liver abscess age ranges from 16 to 65, with majority of patients being in young age group (14-34 years). The median age for our study of liver abscess is 31years. The upward shift in age range has been demonstrated in earlier reports, but is more marked in the series by the third decade in the setting of intra-abdominal infections (commonly appendicitis).[10,17-22] In our study of liver abscess cases males 41 (82%) and females 9 (18%) with M:F ratio being 4.5:1. Females presented with liver abscess were mainly belonging to low socio economic status and poor hygiene few due to drinking of contaminated Mohsen et al, with 77% of their cases were aged over 50 years.[2] Our study matches markedly with the pre-antibiotic era study by Oschner et al, where median age was water while males presenting with liver abscess majority due to poor hygiene and secondarily due to drinking of contaminated water and alocohol being the least cause for liver abscess. Our study matches with study done by Acuna-Soto et al, which showed a higher proportion of men than women (ratio, male:female=3.2:1, $p<0.05$) but still male to female ratio is higher i.e. M:F ration 4.5:1.[23] Few other study done by Chou shoed the majority of the patients were male (55.5%), and almost a half were female (48.9%) i.e. M:F ratio is 1.13:1. In a study by Shabot et al, showed M:F ratio as 2.75:1.In our study, amoebic liver abscess was the most predominant cause as 39 (78%) of 50 cases belonged to this group.[24] In a study conducted by Walsh had found highest incidences of amoebic liver abscess in India, Mexico, East and South Africa, and portions of Central and South America.[8] Incidence is increased in areas with higher poverty levels, presumably a direct reflection of poor sanitation, public health, and hygiene. Where as in our study highest cases of live abscess with maximum amoebic liver abscess was predominantly due to drinking of contaminated water 26 (52%) and with poor hygiene 21 (42%) and alcoholic as 3 (6%) in study of 50 cases. In a study conducted by Barnes et al, in Los Angeles County Hospital, 96 of 144 cases (66.66%) of liver abscesses were amoebic.[25] Hence studies conducted by Walsh and Barnes et al, showed highest findings of amoebic liver abscess which is very similar to our study of liver abscess that is 39 (78%) in 50 cases.[8,25]

In our study abdominal ultrasonography was an important tool for scanning and identification of liver abscess with differentiation of Right lobe liver abscess with left lobe liver abscess. Ultrasonography suggested highest number of liver abscess in right lobe of liver 47 (94%) as compared to that of left liver abscess 3 (6%) in 50 cases of liver abscess and in those cases who had CECT scanning of abdomen 4 (8%) cases CECT scan showed Right lobe liver abscess with pleural effusion in 2(4%) and other 2 scan showed similar ultrasonography findings out of 50 cases. Where as in a study conducted by Mohsen et al, abdominal sonography was sensitive and specific in 90% in this series, and in those who had CT scanning this was positive in 100%, but was not routinely used.[2] In this study, the number of PLAs located in the left lobe alone was 8%, a rate similar to a previous report.[26]

The variations in location and multiplicity of abscesses may be explained by improved diagnostic techniques and skills. The present study did not find any correlation between the presence of either single or multiple lesions and underlying disease.

In our study microbial pathogen was most commonly found when pus was obtained and sent for culture with *Entamoeba* Histolytica in 24(48%) cases as highestorganism, where as *Escherichia Coli* in 18 (36%) cases, *Klebsiella* in 5(10%) and no organisms were found in 3(6%) cases of the total 50(100%) cases studied. In 34(68%) cases out of 50(100%) cases of liver abscess were medically managed along with percutaneous aspiration and rest 16(32%) were managed with pigtailing and was than managed conservatively.

In a study conducted by Shah Naveed et al, majority of patients had amoebic liver abscess whereas *Escherichia Coli* and *Klebsiella* were the most common organisms cultured from the pyogenic abscess And majority of amoebic liver abscess patients were treated with drug therapy alone whereas all pyogenic liver abscess required some form of drainage.[27] These results match with those of McGarr et al, a prospective study were 150 of 178 patients were managed successfully with drug therapy alone, with those demonstrating clinical deterioration or no improvement after 48 to 72 hours then receiving percutaneous ultrasound-guided aspiration.[28] Thus we conclude that conservative medical management of uncomplicated liver abscesses is safe, with patients who fail to respond medical therapy should be considered for ultrasound guided percutaneous aspiration.

In bacterial culture *Escherichia coli* and *kliebsella* were the most common organisms grown from the drained abscess. This is in accordance to the studies conducted by Rahimian et al and Johannsen et al who also reported *Escherichia coli* and *Klebsiella* to be the most common organism cultured.[29] A study conducted by Giorgio et al, (1995) showed cure (normalization of clinical, laboratory, and imaging parameters) was achieved in 113 patients (98.3%) of pyogenic liver abscess with percutaneous ultrasound guided drainage of the abscess.[30] Surgery still plays a vital role in the comprehensive treatment of hepatic abscesses. This is illustrated in a series from Bertel et al in which 61% of patients with hepatic abscesses required an additional procedure at time of operation to treat the causative condition.[31] From all the above studies conducted our study had most similar findings but in our management with medical therapy along with percutaneous aspiration is more beneficial as our patients did not had any complications and were managed conservatively.

CONCLUSION

In India, amoebic liver abscess commonly presents to the casualty department, surgery and medicine outpatient department and inpatient department of surgery. We conclude that out of 50 cases of liver abscess age ranges from 16 to 65, with majority of patients being in young age group (14-34 years). The median age for our study of liver abscess is 31 years, where an upward shift in age range has been noted. It has also been noted that the incidence of liver abscess more in males 41 cases (82%). It was noted that drinking contaminated water 26 cases (52%) was the most common cause for liver abscess followed by poor hygiene 21 cases (42%) as the second most common cause for liver abscess and Alcohol as in 3 cases (6%) of total liver abscess cases. We have managed 34 cases (68%) with medical and percutaneous aspiration and in rest 18 cases (32%) ultrasonography guided pigtailing was done. Amoebic liver abscess is to be suspected in persons presenting with fever, pain in abdomen associated with vomiting and diarrhoea to the emergency department and hepatospleenomegaly as the presenting feature is not always present. Conservative management for uncomplicated liver abscess and ultrasonography guided insertion of per-cutaneous pigtail catheter drainage for complicated as well as uncomplicated liver abscess are both efficacious as treatment modalities. Percutaneous aspiration being the choice along with medical management yields far better results. According to our study ultrasonography is the most important recommended tool for the initial diagnosis for liver abscess cases with percutaneous aspiration and pigtailing as confirmatory diagnosis, with culture report being obtained after these procedures. Further followed up with medical treatment (antibiotics) as a line of management. Altough there is advancement in the trend in investigation modalities, the percentage of ameobic liver abscess cases remains the same.

Hence the prognosis of liver abscess has been improved with different advanced modalities in the management of liver abscess with less or no mortality in liver abscess cases except in patients with malignant disease.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Branum GD, Tyson GS, Branum MA. Hepatic abscess: Changes in etiology, diagnosis and management. Ann Surg. 1990;212:655-62.
2. Mohsen AH, Green ST, Read RC et al Liver abscess in adults: Ten years' experience in a UK centre. Q J Med. 2002; 95:797-802.
3. Johannsen EC, Sifri CD, Madoff LC. Pyogenic liver abscesses. Infect Dis Clin North Am. 2000;14:547-63.
4. Chou FF, Sheen-Chen SM, Chen YS, Chen MC.. Single and multiple pyogenic liver abscesses: Clinical course, etiology, and results of treatment. World J Surg. 1997;21:384-8.
5. Chu KM, Fan ST, Lai EC, Lo CM, Wong J. Pyogenic liver abscess: An audit of experience over the past decade. Arch Surg. 1996;131:148-52.
6. Civardi G, Filice C, Caremani M, Giorgio A. Hepatic abscesses in immunocompromised patients: Ultrasonically guided percutaneous drainage. Gastrointest Radiol. 1992;175:17-23.

7. Alvarez Perez JA, Gonzalez JJ, Baldonedo RF et al, Clinical course, treatment, and multivariate analysis of risk factors for pyogenic liver abscess. Am J Surg. 2001;181(2):177-86.
8. Walsh JA. Problems in recognition and diagnosis of amebiasis: Estimation of the global magnitude of morbidity and mortality. Rev Infect Dis. 1986;8:228-38.
9. Wong WM, Wong BC, Hui CK et al, Pyogenic liver abscess: Retrospective analysis of 80 cases over a 10-year period. J Gastroenterol Hepatol. 2002;17:1001-7.
10. Seeto RK, Rocky DC. Pyogenic liver abscess: Changes in etiology, management, and outcome. Medicine. 1996;75:99-113.
11. Sabbaj J, Sutter VL, Finegold SM: Anaerobic pyogenic liver abscess. Ann Intern Med. 1972;77:627-38.
12. Chemaly RF, Hall GS, Keys TF, Procop GW. Microbiology of liver abscesses and the predictive value of abscess gram stain and associated blood cultures. Diagn Microbiol Infect Dis. 2003;46:245-8.
13. Bangaroo AK, Malhotra AS: Isolated hepatic tuberculosis. J Ind Assoc Paediatr Surg 2005;10(2):105-7.
14. Conter RL, Pitt HA, Tompkins RK, Longmire WP Jr. Differentiation of pyogenic from amebic hepatic abscesses. Surg Gynecol Obstet. 1986;162:114-20.
15. Lodhi S, Sarwari AR, Muzammil M, Salam A, Smego RA. Features distinguishing amoebic from pyogenic liver abscess: A review of 577 adult cases. Trop Med Int Health. 2004;9:718-23.
16. Petri WA Jr, Singh U. Diagnosis and management of amebiasis. Clin Infect Dis. 1999;29:1117–25.
17. Perera MR, Kirk A, Noone P. Presentation, diagnosis and management of liver abscess. Lancet. 1980;2:629-32.
18. Johnson RD, Muller PR, Ferrucci JT et al, Percutaneous drainage of pyogenic liver abscess. Am J Roentgenol. 1985;144:463-7.
19. Rintoul R, O'Riordan MG, Laurenson IF, Crosbie JL, Allan PL, Garden OJ. Changing management of liver abscess. Br J Surg. 1996;83:1215-8.
20. Neoptolemos JP, Macpherson DS, Holm J, Fossard DP. Pyogenic liver abscess: a study of forty-four cases in two centres. Acta Chir Scand. 1982;148:415-21.
21. Herbert DA, Fogel DA, Rothman J et al, Pyogenic liver abscesses: successful non-surgical therapy. Lancet. 1982;1:134-6.
22. Ochsner A. Pyogenic abscess of the liver. Am J Surg. 1938;40:292.
23. Acuna-Soto R, Maguire JH, Wirth DF. Gender distribution in asymptomatic and invasive amebiasis. Am J Gastroenterol. 2000;95(5):1277-83.
24. Marc SJ, Patterson M. Amebic liver abscess: 1966-1976. Am J Digest Dis. 1978;23(2):110-8.
25. Ralls PW, Barnes PF, Johnson MB, De Cock KM, Randall RD, Halls J. Medical treatment of hepatic amebic abscess: rare need for percutaneous drainage. Radiology. 1987;165:805-7.
26. Satiani B, Davidson ED. Hepatic abscesses: improvement in morality with early diagnosis and treatment. Am J Surg. 1978;135:647-50.
27. Shah N, Gupta VB, Kapoor M, Quari H, Altaf A, Para M. Liver abscess in the tropics: an experience from Jammu. Scottish Med J. 2014;59(3):167-71.
28. McGarr PL, Madiba TE, Thomson SR, Corr P. Amoebic liver abscess: results of a conservative management policy. South African Med J. 2003;93(2):32-6.
29. Rahimian J, Wilson T, Oram V, Holzman RS. Pyogenic liver abscess: recent trends in etiology and mortality. Clin Infect Dis. 2004;39:1654.
30. Livraghi T, Giorgio A, Marin G, Salmi A, De Sio I, Bolondi L, Torzilli G. Hepatocellular carcinoma and cirrhosis in 746 patients: long-term results of percutaneous ethanol injection. Radiology, 1995;197(1):101-8.
31. Bertel CK, van Heerden JA, Sheedy PF. Treatment of pyogenic hepatic abscesses: surgical vs percutaneous drainage. Arch Surg. 1986;121(5):554-8.

Cite this article as: Narwade N, Bagul A, Khan N, Murali S, Borude R, Ray A, et al. What is the recent trend in the clinical study of liver abcess cases? Int Surg J 2018;5:1382-7.