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Liver abscess: clinical profile and management in tertiary care hospital

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Abstract

Introduction: Liver abscess is defined as collection of purulent material in liver parenchyma which can be due to bacterial, parasitic, fungal, or mixed infection. It is a life-threatening and a potentially serious condition if left untreated. Therefore, it is very important for prompt diagnosis and appropriate management at the earliest. The aim of this study was to assess the clinical profile and management in patients with liver abscess.

Materials and methods: This study was done on patients of liver abscess who were admitted in our institute in one year period from January 2015 to December 2015. We have studied forty seven patients, both male and female of all age groups. Medical records of these patients were analyzed for presenting clinical features, examination findings, radiological tests and treatment modalities.

Results: There were 44 males and 3 females in the present study. Most of patients presented with abdomen pain (91.38%), tenderness (82.97%) and fever (82.97%). Eight (17.02%) patients with concurrent respiratory complains present. Most of abscesses were present in right lobe (72.34%) and four patients had abscesses in both lobes of liver. Single abscess was present in (76.59%) of patients and multiple abscesses were present in 11 patients. Thirteen (27.65%) patients were anemic and (70.21%) patients had leucocytosis. Eight (17.02%) patients had serum bilirubin>1.2gm%, (12.76%) patients had elevated SGOT/PT, (6.38%) had elevated alkaline phosphatase

Conclusion: Most common presenting feature is pain abdomen followed by fever. Ultrasound abdomen is useful not only in diagnosis and intervention but also in the follow up of the condition and to assess resolution.

Keywords: Liver abscess, Lobes of liver, Size of abscess, pain and tenderness

Introduction

Liver abscess has been an important clinical problem which requires early interventions. Two types of liver abscess are common – Amoebic and Pyogenic. Worldwide 40-50 million people are infected with amoebic abscesses with majority in developing countries. [5] India has 2nd highest incidence of liver abscess in the world. [7] Early manifestation of amoebic liver abscess is abdominal pain and fever is almost invariable, sometimes presents as fever of

unknown origin. [2] The mortality of patients with amoebic liver abscess is approximately 5% but when the abscess ruptures, it reaches up to 50% [10]. The aim of study was to review the presenting complaint, systemic examination findings, blood investigations and imaging studies with simultaneously treatment followed.

Materials and methods

This is retrospective study which was carried out in the Department of Surgery during one year period. Inclusion criteria were patient with confirmed diagnosis of liver abscess. The diagnostic criteria were: clinical features, abdominal ultrasonography, radiology, CECT abdomen and findings of laparotomy. The data of patients were enrolled as age, sex, symptoms and signs and other positive history, findings of general, systemic examination and values of complete blood examination, serum SGOT/PT, alkaline phosphatase, blood urea, sugar, serum creatinine, bilirubin, PTI/INR, X-ray chest, abdominal ultrasonography, computerized tomography (CT) scan when ever needed and outcome of the disease.

Results

Medical records of a total 47 patients were studied. In this study there were 44 males and 3 females in the ratio of 14.66:1. Mean age of patients was 43.72 years. Age and sex distribution is shown in table 1.Maximum numbers of patients (38.29%) are seen in 41-50 years of age group and only three patients were reported less than twenty years of age. Most of patients presented with abdomen pain (91.38%), tenderness (82.97%) and fever (82.97%).

There were (17.02%) patients with concurrent respiratory complains.

However, (27.65%) patients had pleural effusion corresponding to the side of the abscess which was evident in x-ray chest. Generalized peritonitis, in (6.38%) and ascites were seen in (4.25%) as shown in table 2.

Ultrasonography was performed in all patients, the findings of which were summarized in table 3.Most of abscesses were present in right lobe (72.34%) and four patients had abscesses in both lobes of liver. Single abscess was present in (76.59%) of patients and multiple abscesses were present in 11 patients. (12.76%) patients having abscess<5 cm sized responded to metronidazole alone and rest of the patients and patients with abscess size >5 cm (87.23) treated with metronidazole with aspiration of abscess when abscess liquefied.

Table 1: Age and sex distribution of patients with liver abscess.

Age(YEARS)	MALE		FEMALE		TOTAL	
	NUMBER	Percentage	Number	Percentage	Number	Percentage
≤20	3	6.38	0	00	3	6.38
21-30	6	12.76	0	00	6	12.76
31-40	7	14.89	0	00	7	14.89
41 -50	16	34.04	2	4.25	18	38.29
51 -60	5	10.63	1	2.12	6	12.76
>60	7	14.89	0	00	7	14.89
TOTAL	44	93.61	3	6.38	47	100

However out of them 7 patients developed rupture despite these treatment and 3 patients already presented with rupture underwent laparotomy and open drainage. Patients with rupture in right thoracic cavity treated with intercostal drainage tube insertion with metronidazole and aspiration of ALA.

Table 2: Presenting manifestations of patients with liver abscess at time of admission.

Symptoms	Number of patients		Signs	Number of patients	
	Number	Percentage		Number	Percentage
Abdominal pain	43	91.38	Tenderness	39	82.97
Anorexia	32	68.08	Gen.Peritonitis	3	6.38
Fever	39	82.97	Icterus	4	8.51
Nausea/ Vomiting	27	57.44	Pleural effusion	13	27.65
Jaundice	4	8.51	Ascites	2	4.25
H/O Loose stool	7	14.89			
Respiratory symptoms	8	17.02			

Table 3: Ultrasonography findings in patients with ALA.

		number	percentage
Hepatomegaly		14	29.78
Situation of abscess cavity	Right	34	72.34
	left	9	19.14
	Both lobes	4	8.51
Number of abscesses	Single	36	76.59
	multiple	11	23.61
Size of abscess	<5cm	6	12.76
	>5cm	41	87.23
Rupture abscess		7	15.89

Table: 4 Laboratory profiles of patients.

Investigation	Cut of value	Number of patients	percentage
Hb. (g/dl)	<11Gm/dl	13	27.65
TLC	>11,000	33	70.21
Bilirubin	1.2	8	17.02
Urea	>40	6	12.76
creatinine	>1.2	4	8.51
Alkaline phosphatase	>187	3	6.38
SGOT	<50IU/L	12	12.76
SGPT	<50IU/L	12	12.76
PTI/INR	<1.2	5	10.63

Lab. investigations are shown in table 4.Thirteen patients (27.65%) were anemic and (70.21%) patients had leucocytosis. Eight patients (17.02%) had serum bilirubin>1.2gm%, (12.76%) patients had elevated SGOT/PT, (6.38%) had elevated alkaline phosphatase, (12.76%) patients had altered blood urea and serum creatinine in (8.51%) patients.PTI/INR was deranged in (10.63%) of patients.

Discussion

Liver abscess has been recognized since Hippocrates (400 B.C.) who speculated that the prognoses of the patients were related to the type of fluid within the abscess cavity. [12] Liver abscess is found more commonly in men between 20 and 40 years of age, but can occur at any age. Approximately 60% are solitary and mainly located in the right lobe of the liver, as a result of the streaming of portal blood flow secondary to the fact that the right lobe is predominantly supplied by the superior mesenteric vein, and because most of the hepatic volume is in the right lobe. The primary mode of treatment of amebic liver abscess is medical; however as many as 15% of amebic abscesses may be refractory to medical therapy. [25] We have also given medical treatment as first line management to all our patients in our study.

According to WHO estimation, 50 million cases of *Entamoebahistolytica* and 1 lakh death occurred annually. [15] In our study 44(93.61%) were male and only 6.38% were females. This infection is more common in males than females and is rare in children [2] In India, due to poor sanitary condition and a lower socioeconomic status, amoebiasis is endemic and amoebic liver abscess accounts for 3-9% of all cases of amoebiasis. [17] Liver abscess is 3 to 10 times more common in men. [20]

The majority of patients were belongs to the age group of 30-40 years and was comparable with other studies [24].Higher prevalence of ALA in the young age in a country like India could be due to high use of alcohol by this young group. [11] Another explanation could be that people of this age keep out door for longer time, exposing themselves for amoebiasis through contaminated food and water. Bhatti and his co-workers reported a peak incidence of ALA between 14-30 years and PLA in the fourth decade .[5] Higher prevalence of ALA in the young age in a country like India could be due to high use of alcohol by this young group. [11]

Another explanation could be that people of this age keep out door for longer time, exposing themselves for amoebiasis through contaminated food and water. Bhatti and his co-workers reported a peak incidence of ALA between 14-30 years of age. [5] The clinical presentation of the patients studied in our series was similar to the descriptions in previous reports. [13]

The common symptoms and signs of liver abscess in our study were fever (82.97 %), abdomen pain (91.38%) and tenderness (82.97%) and hepatomegaly (29.78%). These clinical manifestations are similar to those described in previous studies. [9, 3] Also Alam F, et al in their study showed amoebic liver abscess patients presented with fever, abdominal pain and dysentery was 98.89%, 97.78% and 7.78% respectively.[1]

In our study hepatomegaly was in 29.78%, right lobe abscess in 72.38%, left lobe abscess in 19.14% and both lobe 8.11% of patients. Pleural effusion was seen in 27.65% of cases. Our findings were also comparable with Sharma MP; et al. [21] Similar study was also done by Hughes MA et al. [13] 76. (59%) of our patients had solitary abscesses, similar to a previous report by Branum GD, et al. [6] We encountered multiple liver abscesses in 23.61% of the patients, similar to the 20-25% incidence of multiple liver abscesses reported by Sharma *et al* [22].

All the studies have been found to be unanimous in respect to pain abdomen, particularly right upper quadrant as the commonest presenting feature of liver abscess. Hepatomegaly which is observed in our study around 40% is in conformity with other studies. [11, 14] Abdominal tenderness and hepatomegaly were found as the most helpful signs in suggesting a Pyogenic liver abscess in another study. [17] In Indian situation, ALA should be suspected in persons presenting with prolonged fever and pain abdomen to the emergency department and hepatomegaly as the presenting feature is not always present. [18] Leucocytosis was observed in 68% of cases of PLA in a study done by Malik and his co-workers. [17] Liver abscess, particularly amoebic is common in tropical regions like the Indian subcontinent. [11]

Young patients with an amoebic liver abscess are more likely present in the acute phase with prominent symptoms of disease. Most patients are febrile and have right-upper quadrant pain, which may be dull in nature and may radiate to the shoulder. Point tenderness over the liver and right-sided pleural effusion is common. Jaundice is rare. Although the initial site of infection is the colon, less than one-third of patients with an amoebic abscess have active diarrhoea.[4] In our study amoebic liver abscess was reported in 72.34 % in right lobe. Most of the cases had solitary abscess of liver (76.69%). Mukhopadhyay et al in a prospective study reported liver abscesses involving right lobe in 85.53% of cases. [19] Mean age of patients was 43.72 years. Male to female ratio was 14.66:1. The age predisposition and gender differences may be as a result of high alcohol intake by young male which predisposes to amoebic liver abscess. In a prospective study by Makkar et al [16] the liver iron was found to be significantly higher in patients with amoebic liver abscess, both alcoholic and non-alcoholic. The higher liver iron in alcoholic amoebic liver abscess cases was presumably due to regular alcohol use. Also, because of the regular menstrual blood loss, females in the reproductive age group are known to have lower iron stores. This low iron, which is unsuitable for the growth of *E. histolytica*, might act as a protective factor against the invasion of *E. histolytica* in such females. Most common symptoms of liver abscess are pain abdomen and fever which were present in 96% and 82% of our patients, respectively. Ghosh et al have reported fever as most common feature in 99% cases and Sharma et al have reported pain abdomen in 78% cases. [8]

Cough was reported in 39 % and pleural effusion in 35 % of cases. In a study by Ghosh et al cough was reported by 30% of cases and in Sharma et al it was reported by 3.5% of cases. [13, 11] Mukhyopadhya et al report pleuropulmonary involvement in 24% of cases. [4]

Pleuropulmonary involvement which is reported in 20 - 30% of patients is the most frequent complication of amoebic liver abscess. Manifestations include sterile effusions, contiguous spread from the liver and rupture into the pleural space. Sterile effusions and contiguous spread usually resolve with medical therapy. [4]

Amoebic peritonitis is considered to be the second most common complication of amoebic liver abscess. Mukhyopadhya et al reported an incidence of 26.39% of peritonitis in their study. [4] However in our study incidence was found to be 4%. The size of the abscess appears to be the most important risk factor for rupture, and the overall incidence of rupture ranges from 3% to 17%.[10] Icterus was reported in 20% of our patients. In earlier studies from India, it was reported in 45 - 50% of patients. But after advent of good antimicrobial therapy, it has become less common. Mild abnormalities of LFT results, including albumin, PT-INR, ALP, AST, and bilirubin levels, are typical. The most common LFT

abnormality is an elevated PT-INR. [10] Indication for laparotomy was peritonitis following rupture of liver abscess, 4% of patients underwent surgical intervention. The overall mortality rate seen in amoebic liver abscess from various series ranges from 2-15%. [23] But in our study there was no mortality seen.

Conclusion

Liver abscess is a common problem in middle age men in developing countries. Most common feature is pain abdomen followed by fever. Patients presenting with pain in upper abdomen on right side and fever with tender hepatomegaly should raise a clinical suspicion of liver abscess. Surgery should be done in patients with severe sepsis. The marked reduction in the morbidity and mortality of liver abscess can be attributed to early diagnosis which permitte timely intervention, better antibiotics with improved intensive care. Ultrasound abdomen is useful not only in diagnosis and intervention but also in the follow up of the condition and to assess resolution.

References

1. Alam F, Salam MA, Hassan P., Mahmood I, Kabir M, Haque R, et al. Amebic liver abscess in northern region of Bangladesh: Sociodemographic determinants and clinical outcomes. BMC Research Notes, 2014; 7: 625.
2. Amin AB, Patel RD, Doshi C, Bhuva AV. A comparative study of different modalities of treatment of liver abscess. IAIM. 2015;2(4):11-6.
3. Barnes PF, DTN, Ralls PW. A comparison of amebic and pyogenic abscess of the liver. *Medicine* (Baltimore) 1987;66:472-483.
4. Barshak MB, Kaper DL. Intraabdominal abcesses and infections. In Kasper DL, Jameson JL, Fauci AS, Longo DL, Hauser SL, Loscalzo J. Harrison's principles of internal medicine. 19th edition. New York: McGraw-Hill. 2015:850.
5. Bhatti A, Ali F, Satti S, Satti T. Clinical & pathological comparison of Pyogenic and Amoebic liver abscess .Advances in Infectious Diseases 2014;4:77-123.
6. Branum GD, Tyson GS, Branum MA, Meyers WC. Hepatic abscess: Changes in etiology, diagnosis and management. *Ann Surg* 1990.212:655-662.
7. Channanna C, Rehman FU, Choudhuri B, Patil A. Clinical study, diagnosis and management of Liver Abscess at VIMS, Bellary. .Journal of Evidence Based Medicine and Health Care 2014; 1:668-85.
8. Cheng EY, Zarrinpar A, Geller DA, Goss JA, Busuttil RW. Liver. In Brunicardi FC, Andersen DK, Billiar TR, Dunn DL, Hunter JG, Matthews JB et al. Schwartz's Principles of Surgery.10th edition. Mc Graw Hill. 2015:1263-1307.
9. Chiu CT, Lin DY, Wu CS, Chang-Chien CS, Sheen IS, Liaw YF. A clinical study on pyogenic liver abscess. *Taiwan Yi Xue Hui Za Zhi* 1987; 86:405-412.
10. Dudeja V, Fong Y. The Liver. In Townsend CM, Evers BM, Beauchamp RD, Mattox KL. Sabiston textbook of Surgery, 20th edition. Philadelphia: Elsevier. 2016:1418-1481.
11. Ghosh S, Sharma S, Gadpoyle A K, Gupta H K, Mahajan R K, Sahoo R, et al. Clinical, Laboratory, and Management Profile in Patients of Liver Abscess from Northern India. Journal of Tropical Medicine 2014 Article ID 142382.
12. Hippocrates. 1886: The Genuine Works of Hippocrates, vols 1 & 2. Transl [from the Greek with a preliminary discourse and annotations]. New York: William Wood & Co., 1886: 57, 58,266,267.
13. Hughes MA, Petri WA Jr. Amebic liver abscess. *Infect Dis Clin North Am* 2000; 14:565-582, viii.

14. Jha AK, Das A, Chowdhury F, Biswas MR, Prasad SK, Chattopadhyay S. Clinicopathological study and management of liver abscess in a tertiary care center. J Nat Sc Biol Med 2015; 6:71-5.
15. Li E, Stanley SL. Amoebiasis. Gastroenterol Clin North Am., 1996; 25: 471-492.
16. Makkar RP, Sachdev GK, Malhotra V. Alcohol consumption, hepatic iron load and the risk of amoebic liver abscess: a case-control study. Internal Medicine, 2003.42(8):644-9.
17. Malik AA,Bari SU,Rouf KA,Wani KA.Pyogenic liver abscess: Changing patterns in approach .World J Gastrointest Surg. 2010 ; 2: 395–401
18. Mathur S, Gehlot RS Mohta A, Bhargava N.Clinical Profile of Amoebic Liver Abscess.. Journal of Indian Academy of Clinical Medicine 2002; 3: 367-73
19. Mukhopadhyay M, Saha AK, Sarkar A, Mukherjee S. Amoebic liver abscess: presentation and complications. Indian J Surg. 2010;72(1):37-41.
20. Sepulveda B, Manzo NTG. Clinical manifestations and diagnosis of amebiasis. In: Martinez-Palomo A, ed. Amebiasis: Human Parasitic Diseases, No. 2, Amsterdam: Elsevier; 1986:169-187.
21. Sharma MP, Dasarthy S, Verma M, Saksena S, Shukla DK. Prognostic markers in amebic liver abscess: a prospective study. Am J Gastoenterol., 1996; 91: 2584-2588
22. Sharma MP, Kumar A. Liver abscess in children. *Indian J Pediatr* 2006.**73**:813-817.
23. Sharma N, Sharma A, Varma S, Lal A, Singh V. Amoebic liver abscess in the medical emergency of a North Indian hospital. BMC Research Notes. 2010;3(1):21.
24. Tejas N Hathila, Chirag J Patel, Mihir P Rupani. 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.
25. Thompson; **:** JE Jr, Forlenza S, Verma R. Amebic liver abscess: a therapeutic approach. *Rev Infect Dis* 1985171-179.