Amoebic liver abscess: presentation and complications

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Abstract

Background Amoebic liver abscess (ALA) is the most common inflammatory space occupying lesion of the liver. It has a highly variable presentation causing diagnostic difficulties. Untreated, complicated ALA has high morbidity and mortality.

Objective To study the various types of clinical presentation and complications of ALA in order to establish early diagnosis and prevent complications.

Materials and methods A prospective study was conducted in the Department of Surgery of Calcutta National Medical College and Hospital from July 2005 to June 2008. All patients with a confirmed diagnosis of ALA during this period were included in the study.

Results Seventy-two patients with 76 ALAs were studied over a 3-year period. The age ranged from 21 to 72 years (mean age being 43.64 years). There were 66 males (91.67% of the patients) and 6 females (8.33% of the patients). The (31–40 years) age group showed the highest incidence consisting of 40.28% of the cases. Pain was located most commonly in the right hypochondrium in 60 patients (83.33%). Fever was observed in 58 patients (80.56%). Solitary abscess cavity was present in 68 patients

(94.44%). The right lobe alone accounted for 65 (85.53%) of the abscesses. The most common echo pattern encountered in ultrasonography was the echorich pattern in 54 (71.05%) abscesses. Forty-four patients (61.11%) gave history of alcohol consumption. Diagnosis was missed in 21 patients (29.17%), particularly in those with atypical presentations. The most common complication was pleuropulmonary in 24 patients (33.33%), followed by intraperitoneal rupture in 19 patients (26.39%). Other complications were jaundice ($n = 11$), ascites ($n = 9$), subhepatic effusion ($n = 7$), subphrenic abscess ($n = 3$) and intrapleural rupture ($n = 2$). Ultrasonography was useful in diagnosing ALA. Despite successful therapy 23 patients (31.94%) had residual abscess cavities on ultrasonography even after 6 months.

Conclusion In an endemic area a patient presenting with lower chest or upper abdominal pain along with tender hepatomegaly should raise the suspicion of ALA. Sonography remains an important tool in the diagnosis of ALA.

Keywords ALA · Diagnosis · Complications

Introduction

ALA is the most common manifestation of extra intestinal amoebiasis. The causative agent is a protozoan, *Entamoeba histolytica*. Ten percent of the world's population harbours *E. histolytica* in their colon, 10% of them may develop invasive amoebiasis [1] and 1–10% of these patients develop amoebic abscess in their liver [2, 3]. ALA is common in tropical countries [4] and is prevalent mainly among the lower socioeconomic class living in unhygienic conditions.

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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 lower socioeconomic group.

ALA has a highly variable presentation, causing diagnostic difficulties. Uncommon manifestations are due to complications which result from the rupture of the abscess into the neighbouring cavities of the pleura, pericardium, peritoneum or compression of the tubular structures in the hepatic hilum or distant embolic dissemination. Early and correct diagnosis of ALA is imperative because delayed diagnosis and treatment leads to complications [5, 6]. The aim of this work is to study the various presentations and complications of this disease so as to make an early diagnosis and prevent complications.

Materials and methods

This study was conducted prospectively over a period of 3 years in the Department of Surgery of Calcutta National Medical College and Hospital, Kolkata. All patients with the confirmed diagnosis of ALA were included in this study.

The diagnosis of ALA was confirmed by the recovery of typical “anchovy” sauce on needle aspiration or surgical decompression in 64 patients (88.89%), by excellent response to specific amoebicidal drugs in 6 patients (8.33%). Or by serological tests in 2 patients (2.78%).

The following tests were performed in all the patients: proctosigmoidoscopy, complete blood and urine examinations, liver function tests, hepatitis profile, examination of stool for ova and cysts, X-ray chest, abdominal ultrasonography and aspiration study of the lesion if >6 cm.

All the data were recorded and analysed and a comparison was made with the contemporary studies.

Results

Seventy two patients with 76 ALAs were included in this study. All the patients were from the lower socioeconomic group. The age ranged from 21 to 72 years (mean age being 43.64 years). The (31–40 years) age group showed the highest incidence constituting 29 (40.28%) of the cases. Table 1 shows the frequency according to the age and sex. There were 66 males and 6 females (M:F = 11:1). Forty-four patients (61.11%) gave history of alcohol consumption of locally fermented brands. The duration of symptoms ranged from 10 to 120 days. Nineteen patients (26.39%) presented within 14 days (acute onset), 45 patients (62.5%) presented within 4 weeks (subacute onset) and 8 patients (11.11%) presented within 2 months (chronic onset) of the start of symptoms.

In 68 patients (94.44%) only 1 abscess cavity was present while in 4 patients (5.56%) two abscess cavities were

present. The right lobe accounted for 65 (85.53%) abscess cavities while the left lobe accounted for 11 (14.47%) of the cavities. In 3 patients both lobes were equally involved. The right to left ratio was 5.91:1. The size of the abscesses in the whole series ranged from 4 to 14 cm. The size of the cavity was >10 cm in 27 cavities (35.53%), between 10 cm and 6 cm in 36 cavities (47.37%) and <6 cm in 13 cavities (17.11%). The most common echo pattern encountered in ultrasonography was the echorich pattern in 54 cavities (71.05%), followed by mixed pattern in 18 cavities (23.68%) and echopoor in 4 cavities (5.26%).

The clinical diagnosis was wrong in 21 patients (29.17%) as shown in Table 2. Six cases of intraperitoneal rupture were misdiagnosed as peptic perforation while 2 more cases of intraperitoneal rupture were misdiagnosed as enteric perforation. In these cases laparotomy was diagnostic. ALA was misdiagnosed as pneumonia in 3 cases, acute cholecystitis in 6 cases and acute pancreatitis in 4 cases. In these cases ultrasonography revealed the diagnosis.

Laboratory studies showed a neutrophilic leucocytosis and elevated sedimentation rate in 58 patients (80.56%) and 51 patients (70.83%), respectively. Anaemia was seen in 38 patients (52.78%). Alanine transaminase (ALT) & aspartate transaminase (AST) were elevated in only 26 patients (36.11%). The serum alkaline phosphates level was elevated in 52 patients (72.22%) (Table 3).

All the 72 patients presented with pain. The pain was located most commonly in the right hypochondrium in 60 patients (83.33%), in the whole abdomen in 8 patients

Table 1 Frequency distribution of abscess according to age and sex of the patients

Age group (years)	Males	Females	Total	%
21–30	5	1	6	8.33
31–40	27	2	29	40.28
41–50	17	3	20	27.78
51–60	13	0	13	18.1
61–70	3	0	3	4.17
71–80	1	0	1	1.39
Total	66	6	72	100

Table 2 Initial diagnosis versus final diagnosis

Initial diagnosis	Final diagnosis	Diagnostic modalities	No. of patients
Peptic perforation	Ruptured ALA	Lap	6
Enteric perforation	Ruptured ALA	Lap	2
Pneumonia	ALA	US	3
Acute cholecystitis	ALA	US	6
Acute pancreatitis	ALA	US	4

US: Ultrasonography; Lap: Laparotomy

(11.11%) in the left hypochondrium in 1 patient (1.39%) and lower chest in 3 patients (4.17%). Fifty-nine patients (81.94%) had tender hepatomegaly. Intercoastal tenderness was present in 54 patients (75%). Fever was observed in 58 patients (80.56%). Three patients (4.17%) presented with new onset diarrhoea.

Regarding complications, 75 complications were identified in 32 patients. Pleuropulmonary complications (Fig. 1) (consisting of right pleural effusion and atelectasis) was the most common complication present in 24 patients (33.33%). This was followed by intraperitoneal rupture in 19 patients (26.39%). Among this 16 patients (22.2%) presented with ruptured abscess and in 3 patients (4.17%) the abscess ruptured during hospitalisation due to delayed diagnosis. Other complications were jaundice ($n = 11$), ascites ($n = 9$), subhepatic effusion ($n = 7$), subphrenic abscess ($n = 3$) and intrapleural rupture ($n = 2$) (Fig. 2). Table 4 shows the frequency of the complication in terms of abscess number and abscess sites.

Table 3 Laboratory findings in patients with ALA

Findings	No. of patients	Percentage
Leucocytosis	58	80.56
Elevated ESR	51	70.83
Hb <10 g%	38	52.78
Serum bilirubin >1 mg/dl	11	15.28
Elevated AST, ALT	26	36.11
Elevated alkaline phosphates	52	72.22

Fig. 1 Pleuropulmonary complication

Ultrasonography performed in 58 patients was diagnostic (Fig. 3). The remaining 14 patients had emergency laparotomy and ultrasonography was not performed. Thirteen patients had abscess cavities <6 cm. Among these 8 patients responded to metronidazole only. The remaining 5 patients required aspiration. Among the 59 patients having abscess cavities >6 cm, 36 patients underwent ultrasonography guided drainage/aspiration of abscess. The remaining 23 patients underwent open drainage. This included 19 cases of intraperitoneal rupture and 4 cases of failed aspiration. The 2 cases of intrapleural rupture required intercostal tube drainage. Despite successful therapy 23 patients (31.94%) had residual abscess cavities on ultrasonography even after 6 months demonstrating that complete resolution of ALA is slow.

Discussion

An ALA can have a variety of clinical presentations. ALA complicates the asymptomatic colonic infection more often than its symptomatic counterpart and this is the main reason why the disease may be overlooked or misdiagnosed [7]. As described by Berne [8], ALA may mimic acute cholecystitis, perforated peptic ulcer, acute hepatitis, cirrhosis, hydatid cysts, pancreatic pseudocysts, pneumonia, acute pleurisy with effusion, empyema, chronic lung disease, malignancy, tuberculosis and pyrexia of unknown origin.

Although an ALA can develop at any age, it is more frequently encountered in adult life with the highest incidence occurring in the third, fourth and fifth decades.

Fig. 2 Intrapleural rupture

Table 4 Frequency of complications in terms of abscess number and abscess sites

Type of complication	Frequency	Site of abscess	No. of abscess cavities	Percentage
Pleuropulmonary	24	Both lobes n = 3 Right lobe n = 21	Multifocal = 3 Solitary = 21	32
Intraperitoneal rupture	19	Both lobes n = 1 Left lobe n = 4 Right lobe n = 14	Multifocal = 1 Solitary = 18	25.33
Jaundice	11	Both lobes n = 3 Right lobe n = 8	Multifocal = 3 Solitary = 8	14.67
Ascites	9	Both lobes n = 3 Right lobe n = 6	Multifocal = 3 Solitary = 6	12
Subhepatic effusion	7	Both lobes n = 3 Right lobe n = 4	Multifocal = 3 Solitary = 4	9.33
Subphrenic abscess	3	Right lobe	Solitary	4
Intrapleural rupture	2	Right lobe	Solitary	2.67
Total	75			100

Fig. 3 ALA as shown by ultrasonography

Our study has shown that the patterns of ALA largely parallels what has been established elsewhere in terms of age, sex, number, size, location and echopattern with few modifications [9]. Pain and fever were the most common presenting features in this study. In this series, the right lobe was most frequently involved. This is consistent with the observation of others [9, 10] and may not be unrelated to the fact that the right lobe receives most of the blood draining the most frequently involved primary site of intestinal amoebiasis, the right colon, through the ‘streaming’ effect in the portal venous flow [11–12]. Diarrhoea has been reported in (12–33%) of the patients [13–15], in our study only 3 patients (4.17%) presented with this symptom. In a similar study 7.5% of the patients presented with this symptom [16].

Alcohol is commonly believed to play some role in the aetiology of ALA and many patients give a past history of consuming it. In our study 44 patients (61.11%) were

chronic alcoholics. Ocshner and De Bakey [17] attribute higher incidence in males to alcoholism, which predisposes to hepatitis and trauma. We found that alcoholics had larger abscesses, greater frequency of complications and delayed resolution of abscesses. Alcohol acts in several ways: a) hepatic damage by alcohol predisposes to organ invasion, b) habitual drinkers often neglect food resulting in lowered body resistance and suppression of liver function, c) liquor prepared locally with no regard for asepsis has a large population of amoeba in it and d) immunity in chronic alcoholics is depressed.

Regarding complications, in this study pleuropulmonary complications consisting of right pleural effusion and atelectasis, accounted for the highest incidence of complications. Twenty-four patients (33.33%) had this complication. This is in confirmation with the reported incidence of 25–42% [14, 18]. Amoebic peritonitis is considered to be the second most common complication of ALA. In our study the incidence was 26.39%. This high incidence can be explained by the fact that many of our patients came from remote villages and presented only when the complication had occurred.

The other complications encountered in this study and also reported by earlier authors are jaundice, ascites and subhepatic effusion. Our experience as well as those of others suggest that both jaundice and ascites tend to occur most commonly in the presence of multifocal abscesses especially when these are associated with impingement of hepatic hilar tubular structures [12, 19–21].

Ultrasonography, though observer dependent, is widely accepted as a first time technique for imaging focal hepatic lesions including liver abscesses [7, 22, 23]. This is attributable to its low cost, greater availability and high accuracy. It is useful not only in diagnosis and intervention but also in the follow up of the condition and to assess resolution. The sensitivity of ultrasonography is nearly

92–97% [14, 24]. However, ultrasonographic features of ALA and other space occupying lesions of the liver e.g. hepatoma, pyogenic liver abscess, etc. may overlap [25]. The combination of ultrasonographic findings with clinical features and aspirate analysis increases the sensitivity [14, 24, 25]. We found that needle aspiration combined with chemotherapy represents a successful therapeutic approach in the treatment of ALA. Serological tests, though highly reliable in the diagnosis of extra intestinal amoebiasis, are not available in most hospitals in India and needle aspiration provides an economic and safe alternative [26].

Ever after 6 months 23 patients (31.94%) had a residual abscess cavity on ultrasound examination. It has been shown that complete resolution of ALA may take years [27, 28]. This is important in the differential diagnosis of space occupying lesion in the liver, especially in those area with a high incidence of ALA and hepatocellular carcinoma.

Conclusion

ALA has a highly variable presentation. The typical features of ALA, which include pain, fever and tender hepatomegaly are non-specific. Therefore in an endemic area, a patient presenting with lower chest or upper abdominal pain along with tender hepatomegaly should raise the suspicion of ALA. Ultrasonography remains an important tool in the diagnosis of ALA.

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