Clinical characteristic of amoebic liver abscesses in the North of Iraq

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ABSTRACT

Objective: The purpose of the study was to find out the clinical characteristic of amoebic liver abscesses in this area, the simplest method for diagnosis and to determine the effectiveness of treatment by metronidazole therapy proved by disappearance of symptoms and regression in the size of the abscesses by ultrasound.

Method: We studied prospectively all cases of suspected liver abscesses admitted to our unit over 2 years (1990 & 1991). A special case sheet was prepared. Daily follow up of patients was carried out in hospital for at least 10 days. Patients were later followed up by ultrasound after discharge. We compared the rate of infection from the hospital records over the last 9 years up to the end of 1998.

Results: We found the clinical features of the disease similar to those mentioned in essential text books of medicine, except that pain is not always epigastric while fever may be absent and hepatomegaly is not marked. Ultrasound is a simple, cheap diagnostic test, which is available. Metronidazole is an effective treatment and none of the patients required an invasive method for diagnosis or treatment. None had secondary bacterial infection.

Conclusion: Amoebic liver abscess if untreated is a grave disorder. We concluded that recognizing the disorder clinically and proving it by ultrasound is the main method for diagnostic confirmation. Following the hospital records of the last 9 years, it seems that the rate of infection is declining in this area.

Keywords: Amoebic liver abscess, clinical characteristic, diagnosis, treatment.

Saudi Medical Journal 2000; Vol. 21 (6): 545-549

Amoebiasis is among the common causes of diarrhea in this area, caused by *E.histolytica* which is a common parasite in the large intestine of humans and certain other primates and other animals.[1] Three stages of the organism are encountered: The active amoeba, the intermediate precyst and the inactive cyst. The trophozoite is the only form present in the tissue, and it is also found in feces during amoebic dysentery. The most common form of extra intestinal infection is the amoebic liver abscess which is metastatic assumed to be due to microemboli, including trophozoite, carried through the portal circulation.[1,2] A true amoebic abscess is progressive non suppurative (unless secondarily infected) and destructive without compression; with formation of a wall.[1,2] An amoebic abscess may rarely occur elsewhere e.g. lungs, brain, spleen, or any organ or tissue in contact with active trophozoite which may become the site of invasion and abscess.[1,2,3] Diagnosis of amoebic liver abscess depends on clinical features which include fever, right hypochondrial pain, tenderness, hepatomegaly and is confirmed by serology (Immunoflourescent antibody test (IFAT)) which is positive in 955 of cases of acute invasive amoebiasis. Ultrasonography is of great help in differentiation from other space occupying lesions e.g.: pyogenic abscess, hydatid cyst and also in localization.[2,3] The main problem that faces a physician in this area, with limited facilities, is whether one is dealing with the common

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Received 13th February 2000. Accepted for publication in final form 26th February 2000.

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amoebic abscess or relatively rare pyogenic abscess. Due to similarities in the clinical features of these 2 diseases, the differentiation from a pyogenic abscess is important because management is entirely different.[2,3] Pyogenic abscess(es) occur more commonly in older people and there is frequently an underlying cause e.g. appendicitis, diverticulitis, crohn's disease etc, serology is negative and ultrasound is of value in differentiation. In pyogenic abscess there is increasingly raised alkaline phosphatase and neutrophilia. Treatment of pyogenic abscess is laparotomy or needle aspiration under antibiotic cover, using ultrasound guidance,[3,4,6] while amoebic abscess usually does not require drainage.[2-5,7-8]

Methods. This is a prospective study, carried out over a period of 2 years, studying all cases with the presumptive diagnosis of amoebic liver abscess admitted to our medical unit in the general teaching hospital. Diagnosis was suspected on the basis of clinical features which included history of ill health, fever, pain and tenderness in right hypochondrium (or back pain only) and relatively normal liver function tests. Confirmed by ultrasound examination of the liver which showed in every case a well circumscribed round hypoechoic mass of variable size, with normal surrounding liver tissue and no definite wall. Twelve patients who fulfilled the above criteria were eligible for entry into this study. Patients were cared for by our medical unit team. On the above basis, each patient admitted had a proper history taken, physical examination, laboratory tests: Hemoglobin %, white blood cell count, erythrocyte sedimentation rate (ESR), stool examination, serum bilirubin, liver enzymes (S.G.P.T. (A.L.T) Serum Alanine Transaminase, S.G.O.T (A.S.T) Serum Aspartate Transaminase, S. alkaline phosphatase). Ultrasound examination of the liver was carried out by a very competent radiologist and chest x-ray was taken for every patient. Each patient was kept in hospital for at least 10 days and followed up daily for fever, pain, tenderness and general condition including vital signs. After discharge patients were followed by ultrasound on several occasions. We went through the records of the general hospital for the last 9 years. We found the number of admissions of all medical cases and number of amoebic liver abscess each year.

Results. The patients age ranged from 18-70 years with an average of 25 years and only 3 patients above 50 years (Table 1), with a male over female ratio of 2:1. All were ill looking, 6 out of the 12 cases had only pain in the right hypochondrium. Three cases had only back pain, one epigastric pain and one patient had generalized abdominal pain and one patient had abdominal distension only. All patients, except one case who was diabetic (No. 3), had fever. Liver was just palpable in the majority of cases, only 3 patients had hepatomegaly of 6 cm below the costal margin. Stool examination was negative for vegetative form of *E.Histolytica.* History of diarrhea was present only in 4 cases prior to admission. Liver enzymes (serum alkaline phosphatase, ALT, AST and

Table 1 - Clinical presentation.

Case No.	Age	Days in hospital	Complaints	Fever	Jaundice	General condition	Liver
1	58	11	Rt hypo pain for 7 days	+	Nil	Look ill	Just palpable
2	24	10	Rt hypo pain for 20 days	+	Nil	Look ill	Just palpable
3	65	10	Rt hypo pain for 7 days	-	Mild	Look ill	Just palpable
4	70	10	Rt hypo pain for 10 days	+	Nil	Look ill	Just palpable
5	35	10	Back pain	+	Nil	Look ill	Not palpable
6	37	12	Back pain	+	Nil	Look ill	6 cm palpable
7	18	13	Abd & back pain	+	Mild	Look ill	6 cm palpable
8	25	16	Rt hypo pain	+	Nil	Look ill	7 cm palpable
9	49	11	Rt hypo pain	+	Nil	Look ill	Just palpable
10	30	13	Abd pain 20 days	+	Mild	Look ill	Just palpable
11	24	9	Distension	+	Nil	Look ill	Just palpable
12	19	10	Epigastric pain	+	Nil	Look ill	Just palpable

(+) - Fever; (-) - Afebrile Rt - Right; Hypo - Hypochondrial; Abd - Abdominal

Table 2 - History of diarrhea during the last 3 months.

Case Number	1	2	3	4	5	6	7	8	9	10	11	12
Diarrhoea	(+)ve	(+)ve	(-)ve	(-)ve	(-)ve	(-)ve	(-)ve	(-)ve	(-)ve	(-)ve	(+)ve	(+)ve

Table 3 - Liver function tests.

Case Number	1	2	3	4	5	6	7	8	9	10	11	12
S. Al. Phos IU/L	36	54	72	45	36	108	72	72	72	90	90	36
SGOT IU/L	8	6	5	7	17	5	8	10	6	4	8	9
SGPT	4	8	6	9	7	16	6	6	26	10	10	4
TSB mg%	0.5	0.5	0.8	1	1.2	0.5	1.6	0.6	0.9	1.3	0.7	1.4

S. Al. Phos - Serum Alkaline Phosphatase; SGOT - Serum Aspartate Transaminase SGPT - Serum Alanine Transaminase
TSB - Total serum Bilirubin

Table 4 - Hematological results and ultrasound size of the liver abscess initially.

Case No.	Hb %	WBC	ESR	U/S Abscess Size in liver (hypoecchoic mass)	Gall Bladder
1	70	8900	29	68 mm in Rt lobe	Normal G.B.
2	70	6900	112	100 mm in Rt lobe	Normal G.B.
3	77	6500	48	50 mm in Rt lobe	Normal G.B.
4	94	5800	38	46 mm in Rt lobe	Gall Stones
5	75	6200	70	75 mm in Rt lobe	Normal G.B.
6	75	6600	68	60 mm in Rt lobe	Normal G.B.
7	75	9800	67	46 mm in Rt lobe	Normal G.B.
8	78	4200	76	41 mm in Rt lobe	Normal G.B.
9	66	6900	96	60 mm in Rt lobe	Normal G.B.
10	60	21000	105	60 mm in Rt lobe	Normal G.B.
11	85	6300	92	49 mm in Rt lobe	Normal G.B.
12	95	10400	55	20 mm in Rt lobe	Normal G.B.

Hb - Hemoglobin; WBC - White blood cell counts; ESR - Erythrocyte sedimentation rate; U/S - Ultrasound; Rt - Right; G.B. - Gall Bladder

serum bilirubin were within normal range apart from mild elevation of serum bilirubin up to 2 mg in a few cases which soon returned to normal (Table 1, 2, 3). The size of the abscesses ranged from 40-100 mm in diameter except 1 case which was 20 mm (No. 12). There was no significant anemia or leucocytosis (Table 4) except 1 case (No. 10). All patients had elevated ESR. All patients were given intravenous fluid for a few days and metronidazole 500 mg intravenously every 8 hours for 10 days. All patients had clinical improvement with disappearance of fever and pain in a few days except for 2 cases in which improvement was after 10 days (Table 5). Progress of each patient was monitored by clinical improvement and repeated ultrasound examination, which showed gradual reduction of the size of the abscess (Table 5). All patients improved dramatically on treatment to the extent that it was difficult to convince them to be kept in hospital so long. None of our patients required surgical intervention or invasive methods for diagnosis and no one developed any complications. Regression in the size of the abscess is slow by ultrasound in the first few days and complete resolution can take weeks

Table 5 - Ultrasound pattern of resolution of abscesses in relation to disappearance of fever.

Case No.	Fever abolished in days	Change in size of abscess in mm in days
1	2	70 to 56 mm in 10 days
2	3	100 to 72 mm in 6 days and to 46 mm in 11 days
3	7	50 to 43 mm in 16 days
4	4	46 mm, no change in 1st days and not seen after discharge
5	2	75 to 40 mm in 20 days
6	3	65 to 61 mm in 16 days
7	4	46 mm, no change in 6 days
8	4	41 to 30 mm in 8 days
9	3	45 to 35 mm in 10 days
10	3	60 to 43 mm in 24 days disappeared completely in 12 weeks
11	2	49 mm no decrease in 10 days
12	10	No change in size in 3 weeks, complete resolution in 5 weeks

(Case No. 10 took 12 weeks, and Case no. 12 took 5 weeks for complete resolution). Chest x-rays were normal in all cases. The rate of amoebic liver abscess has declined over the last 9 years possibly due to social and political stability of the area and improvement in water supply and sanitation (Table 6).

Discussion. Liver abscess is a serious condition requiring prompt diagnosis and therapy for optimum results.[9,10] Amoebic liver abscess is a relatively uncommon disease in spite of the relatively high incidence of intestinal amoebiasis. Normally, a physician in this area may encounter a case of amoebic abscess every one to two years, but the increasing incidence in this area at that time was due to political and social unrest during the uprising in this area during the years 1990-1992 (Gulf war). A similar increase in the incidence of amoebic abscess was noted by Barbour[10] in American's during World War II and the Korean conflict, and this is why the rate of infection in our area declined following stability of the area and improvement in sanitation and water supply. We found 12 patients during a 2 year period (8 male, 4 female) which is similar to reports published where there is marked preponderance of the disease in man. A review of the incidence of pyogenic liver abscess during the same period in Sulaimaniya Teaching Hospital revealed only 3 cases (2 following appendicectomy

Table 6 - General hospital admissions over the years 1990 - 1998.

Rate of admission of amoebic liver abscess %	Number of amoebic liver abscesses in one year	Number of all medical cases	Year
0.067	12	18464	1990
0.047	6	12631	1991
0.059	8	15011	1992
0.015	2	15128	1993
0.008	1	14352	1994
0.008	1	14100	1995
0.008	1	14227	1996
0.010	2	20825	1997
0.009	1	16553	1998

and one case cryptogenic in a male patient of 8 years old). There is a recognized difference in incidence of these 2 liver diseases in different geographic areas so pyogenic liver abscess in the United States of America (USA) accounts for 80% of the liver abscesses but in the tropics the incidence of amoebic liver abscess is more common where 10-20% of the population harbor the organism.[7-10] We found that amoebic abscess causes symptoms suggestive of an acute inflammatory process (history was short measured in 1, 2, 3 weeks) but surprisingly other observers in the USA noted that 1/4th of their patients suffered from symptoms for longer than 3 months and up to 3 years.[10] My impression is that amoebic liver abscess in this area has certain epidemiological characteristics which are different from elsewhere. All our patients had fever which disappeared in few days but no one had chill, but surprisingly various observers noted a different rate of chill in their patients.[10] None of our patients had weight loss which is mentioned by other observers probably due to short history in our patients before diagnosis.[10] Diarrhea was present in 4 of our patients and in various other series diarrhea had been reported from 22-90% of patients[8-10] (which seems to be in a similar range). None of our patients had blood in their stools, and none of our patients had symptoms of respiratory tract infection or pleuritic chest pain as is reported in other series,[10] this is because not one of our patients had extension of the disease to the chest.

Physical findings. It seems that jaundice is relatively uncommon in our cases, similar findings being observed by others. The liver was just palpable in all cases except one, which was palpable 6 cm below the costal margin, and all were tender. None had abscess in the left lobe of the liver. None of our patients had abnormalities in chest x-rays but others reported abnormalities on chest x-rays in up to 3/4th of the patients.[10] Anemia was not marked in our patients possibly because of short duration of the illness. Liver function tests were nearly normal but others noted frequent abnormalities of liver function tests.[8-10]

Location. All the abscesses were in the right lobe, but others reported only 90% of their cases to be in the right lobe. All of our patients had a single abscess but 2 or 3 abscesses may occur in the liver.[9,12]

Mortality. There was no mortality in our patients due to early presentation and proper treatment which was started immediately after diagnosis, but generally a mortality of 10-20% had been reported in different series.[10] Needle aspiration was not carried out and does not seem to be necessary.[11,12] All the findings seem to prove that proper history taking and physical examination supported by ultrasound is sufficient for diagnosis.[11,12] Single drug therapy is effective (metronidazole).[12] From the prompt responses of our patients, it does seem that it is not always necessary to continue intravenous metronidazole for 10 days, and possibly a shorter duration is as effective. After follow up of the cases by ultrasound it seems that complete regression may take weeks or months and this has been observed by others.[12]

In conclusion, we found the clinical features of amoebic liver abscess to be similar to those mentioned in essential text books of medicine. Ultrasound is a simple and cheap diagnostic test, and metronidazole is an effective treatment with no invasive methods needed for diagnosis or treatment. None of our patients had secondary bacterial infection and the hospital records of the last 9 years revealed clearly that the rate is declining to a negligible level which is clearly due to social stability and improvement of sanitation.

Acknowledgment. The author would like to thank Dr. Anwar Sheikha for his kind advice and help in introducing me to Saudi Medical Journal and acting as correspondence. Thanks to Dr. Rasul for reviewing the manuscript and Dr. Amer for carrying out the Ultrasound examinations.

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