DIAGNOSIS OF LIVER ABSCESS BY ULTRASOUND

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Amoebic liver abscess is common in Pakistan whereas pyogenic abscess is more prevalent in the west. Timely diagnosis of the liver abscess significantly lowers the morbidity and mortality.

Present study involves ultrasound examination of 200 consecutive patients in a five-year period (September 1990 - August 1995) at civil teaching hospital, Abbottabad and private clinics. One hundred and ninety-six patients (98%) had amoebic liver abscess. In a similar number of cases the abscess was solitary. Abscess was located in right hepatic lobe in 184 (92%). Majority of patients (76%) were males while 24% were females. Age of our patients was between 10-60 years and size of the lesion varied between 3-16 cm.

Ultrasound has proved to be excellent imaging modality in the diagnosis liver abscess. In selected cases abscess can be aspirated or drained under ultrasound guidance.

INTRODUCTION

Bacterial and Parasitic invasion of the liver are two usual aetiological factors in liver abscess. Although pyogenic abscess is reported to be a common type of liver abscess in the west, the incidence of amoebic liver abscess is more in the tropical and subtropical countries. On the global level, amoebic liver abscess is more common titan the pyogenic abscess [3].

Due to recurrent amoebic intestinal infection the prevalence of amoebic liver abscess is very high in our country. Abscess formation is considered as the commonest extra-intestinal complication of Entamoeba histolytica infection.

In pyogenic liver abscess, advent of antibiotics and advances in bacteriology and diagnostic techniques have improved the outcome but mortality rates upto 40-80% are still reported. Delayed and missed diagnosis has been common [4].

Timely diagnosis and treatment of liver abscess can significantly lower the morbidity and mortality [5]. This has been rendered possible with the introduction of modem imaging modalities like ultrasound and computed tomography [6].

MATERIALS AND METHODS

The study was carried out during the period from 1st' September 1990 to 31st August 1995 at Civil Teaching Hospital, Abbottabad and in private clinics. A total of 210 patients of liver abscess were included.

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10 patients were excluded from the study because of unsatisfactory scans due to gas or barium in the bowel or poor probe contact.

The ultrasonic equipment used in this study was a commercially available gray-scale compound B- Scanner fitted with 3.5 MHz internally focussed transducer.

Serial longitudinal, transverse and oblique scans lcm apart were made with patient either lying supine or in right anterior oblique position during quite respiration or in deep inspiration.

Ultrasound findings and clinical history were recorded in a proforma. Relevant investigations and X-Rays were carried out in all the cases. In certain cases results of aspiration and biopsy were recorded.

RESULTS

Out of 200 patients, 196 (98%) had amoebic liver abscess while pyogenic liver abscesses were found in only 4 (2%) cases. One hundred and fifty-two (76%) patients were male and 48 (24%) were females. Age varied between 10-60 years (Table-I).

TABLE -1: AGE AND SEX DISTRIBUTION OF LIVER ABSCESS (200 CASES)

AGE (Years)	MALE	FEMALE	TOTAL	%AGE
10-20	20	12	32	16
21-30	56	08	64	32
31-40	40	-	40	20
41-50	20	24	44	22
51-60	16	04	20	10

Size of the abscess ranged between 3-16 cm (Table-II).

TABLE – II SIZE OF LIVER ABSCESS (200 CASES)

SIZE (Cms)	MALE	FEMALE	TOTAL	%AGE
3-4	16	04	20	10
5-6	36	20	56	28
7-8	20	08	28	14
9-10	40	12	52	26
11-12	32	-	32	16
13-14	04	-	04	02
15-16	04	04	08	04

One hundred and eighty-four (92%) of patients had the abscess located in the right lobe while in 8(4%) cases, it was in left lobe and in another 8 (4%) patients both the lobes were involved simultaneously. In 196(98%) patients, abscess was solitary whereas they were multiple in just 4(2%) (Table-III).

TABLE – III: MORPHOLOGICAL CHARACTERISTICS OF LIVER ABSCESS (200 CASES

TYPE OF ABSCESS	NO. OF CASES	%AGE
1. SOLITARY	196	98
2. RIGHT LOBE	184	92
3. LEFT LOBE	08	04
4. BOTH LOBES	08	04
5. MULTIPLE ABSCESS	04	02

Diaphragmatic excursions was sluggish or absent in 122 (61%) cases. This feature is very helpful in differentiating abscess from cystic lesion such as hydatid where diaphragm shows normal movements. Right sided pleural effusion noted in 94(47%) patients. Ascites (usually in pelvis) was recorded in 66 (33%) of the patients examined.

192(96%) patients had poor socio-economic background and only 8(4%) cases were well-to-do.

Stool examination for amoebic cyst was positive in 51 patients. All pyogenic abscess developed following abdominal surgery.

20 cases of impending rupture were drained under ultrasound guidance and typical Anchovy - Sauce pus was obtained. In 3 patients, dirty yellowish pus was drained which on culture showed Pseudomonas (1), E.coli (1) and Staph aureus (1) as the causative agent. In one patient the culture showed no growth.

DISCUSSION

Amoebic liver abscess is a disease of developing countries whereas pyogenic liver abscess is common in Europe [1]. Man contracts the disease by ingestion of amoeba cysts in contaminated water and food[8]. Strikingly, adult males are affected more commonly[9].

The motile trophozoites enter the portal venous system and are carried to the liver where amoebae multiply and block small intrahepatic portal venous radicles; consequently, infarction, necrosis of hepatic cells and abscess formation follows.

Characteristically the abscess is single and occurs in right lobe of liver near the dome or the inferior surface (Fig. 1).

Fig. 1: Sonogram showing a large amoebic abscess with well-defined irregular margins and located near the diaphragm.

Initially the abscess is without well-defined margins; multiple abscesses are encountered occasionally. These are found more commonly in far advanced cases. In our series, multiple abscesses were noticed in four elderly patients who were critically ill, perhaps multiple abscesses develop in those with jeopardised resistance due to disease and old age.

Small lesions heal without traces but large abscesses with a wall of connective tissue may persist for up to two years following aspiration and therapy. Amoebic liver involvement never leads to cirrhosis; also, amoebic liver abscess is rare in cirrhosis because amoeba is not carried to the liver due to increased portal venous pressure [10]. None of our patients followed for 5 years developed cirrhosis. Similarly, none of patient in the present series had cirrhosis

Pyogenic liver abscess is seen as focal hypo- echoic lesion with irregular well defined margins, usually in the right lobe. There may be distal echo enhancement if the pus is watery.

98% of abscesses in the present study were amoebic. They could be attributed to unhygienic conditions and habits so prevalent in our area.

76% of our patients with abscess were males. This can be accounted for by higher chances of exposure to

unhygienic food and water. Age ranged between 10-60 years. There findings matched well with other authors [8,9].

In contrast, in metastasis, the important differentiating feature is the lack of any detectable distal acoustic enhancement [11]. Rapid change in size of the abscess is seen over a short period of time.

Pyogenic abscesses are often multilocular and may be multiple. Gas may occur in the pyogenic abscess due to gas forming organism. Pyogenic abscess may become chronic. Both these features produce high reflectivity with acoustic shadowing.

Main differentiating features of amoebic and pyogenic liver abscess are summarized below:

PYOGENIC ABSCESS	AMOEBIC ABSCESS
1. Abscess may be single or multiple, usually round in shape; located in right hepatic lobe.	1. Abscess is generally large single; round or oval in shape; situated in right lobe just below diaphragm, inferior surface or sub capsular.
2. Abscess wall is irregular and of variable thickness.	
3. The abscess wall is echogenic.	
4. Distal acoustic shadowings may be seen.	2. The abscess appears as thin wall cyst, well demarcated from the surrounding liver parenchyma.
5. Echogenicity of the abscess varies from totally anechoic to highly echogenic lesion depending upon stage of development and contents of the abscess.	3. No significant wall echoes.
6. Gas may be present in the abscess cavity.	4. Distal sonic enhancement.
	5. Less echogenic than the normal liver parenchyma with fine low level echoes present throughout the abscess.
	6. Gas never seen as E. histolytica is not gas forming organism.

Although medical therapy with metronidazole is standard and effective in over 90% of patients [12,1J], at times percutaneous aspiration and drainage becomes mandatory due to uncertainty of diagnosis or clinical deterioration of the patient. Many authorities [13,14] have reported successh.il use of percutaneous aspiration under ultrasound guidance.

Main indications for aspiration include imminent rupture, deterioration while on medical therapy, noncompliance of medical therapy, pregnancy, left lobe abscess and differentiation of pyogenic from amoebic abscess[14,15,16].

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