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Amebic Liver Abscesses: A New Epidemiological Trend in a Non-endemic Area?

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Abstract. *Background: Amoebic liver abscess (ALA) is the most common extraintestinal complication of colonic amebiasis. In recent decades its incidence in developed European countries has significantly increased because of travel and immigration of individuals from highly endemic areas. We report our 29-year experience in echo-guided percutaneous needle/catheter drainage (EPND/EPCD) of ALA. Patients and Methods: From May 1979 to November 2007, 68 ALA corresponding to 56 patients were diagnosed at our Department. All patients were treated with a metronidazole plus EPND/EPCD approach. Results: The majority of the cases did not need more than two echo-guided punctures. Two patients, both male immigrants (HIV-negative), had unmodified lesions after two EPNDs: catheter drainage was performed. A quick worsening of their clinical conditions and onset of neurological symptoms occurred; in both patients, computed tomography (CT) revealed a brain abscess. Intravenous medical therapy was started, but both died 4 and 3 days, respectively, after the onset of neurological symptoms (overall mortality rate: 3.57%). Conclusion: The unfavorable outcome of two cases is a rare example of failure of percutaneous therapy of ALA. Mortality is a possible event even in a non-endemic area such as Italy. More observational data are needed to confirm the possibility of a new epidemiological trend.*

Amoebic liver abscess (ALA) is the most common extraintestinal complication of colonic amebiasis (1), both in endemic and non-endemic areas. Rates of infection give a clearer picture of the impact of amebiasis on public health. A number of patients ranging between 40,000 and 100,000 die yearly from amebiasis, making this disease the second leading cause of death from parasitic diseases (2). In 1996, 1.3 million cases of intestinal amebiasis were reported in Mexico, consistent with findings of serological studies indicating that more than 8% of the population have had amebiasis (3, 4). In Hue, Vietnam, a city with a population of about 1 million, one hospital reported 1,500 cases of amebic liver abscess over 5 years (5). In Egypt, results of a survey indicated that 38% of individuals presenting with acute diarrhea at an outpatient clinic had amebic colitis (6). In the USA, most cases arise in immigrants from endemic areas, and people living in states that border Mexico have the most disease. In 1993, 2,970 cases of amebiasis were recorded in the USA, 33% of which were in immigrants from Mexico and central and South America, and 17% were from Asia or the Pacific Islands (7). Travellers to endemic areas are also at risk: 10% of 469 individuals with diarrhea after travelling to a developing country were diagnosed with amebiasis in one study, and 0.3% of 2,700 German travellers returning from the tropics were infected with *Entamoeba histolytica* (8, 9). It is then clear that in recent decades, its incidence in developed European countries has significantly increased because of travel to and immigration from highly endemic areas.

At present, ultrasonography (US) has a widely accepted role for diagnosis, therapy and follow-up of this pathological condition in echo-guided percutaneous needle (EPND) or catheter drainage (EPCD) of the fluid that frequently is the most relevant clue to diagnosis because of its specific features ("chocolate syrup" or "anchovy paste" appearance) (1). The therapeutic role of EPND/EPCD has been validated through a period of about thirty years of experience in several experienced centers (10-14), even if some authors (15-19) still reserve this kind of minimally invasive therapy only for cases with poor response to medical therapy or at imminent risk of rupture, fearing allergic reactions and bacterial infection.

We previously described a percutaneous approach characterized by EPND/EPCD combined with medical therapy

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(metronidazole) (20). This EPND/EPCD/metronidazole combined protocol obtained 100% cure in the first 9 years of our experience, without any complication following the procedure, a reduced time of hospitalization and an ultrasound assessed healing period ≤4 months.

The aim of the present study is to report our whole 29-year experience in the EPND/EPCD of ALA in a non-endemic area, adding new observational data.

Patients and Methods

From May 1979 to November 2007, 56 consecutive patients with 68 amebic liver abscesses were diagnosed at our Department, based on aspirated fluid appearance and serology (IHA, ELISA). The majority of them reported fever and pain in the right hypochondrium as main presenting symptoms. The mean age was 32±9 years; patients were mostly males (45 pts.). History of immigration or traveling from and to endemic areas of amebiasis was obtained from 44 patients (78.6%); 30 of them (53.6%) were male immigrants. Previous intestinal disease was present in 33 patients (58.9%). Table I shows the clinical features of our patients.

Sonographic examination of the upper abdomen was performed in all cases using commercially available machines. Percutaneous drainage was performed under US guidance in all patients firstly by means of needle puncture and aspiration: the needle employed was tailored to the cavity's volume using an 18-22G needle (Echojet, HS, Tokyo, Japan). In order to evacuate the abscess cavity, fluid was aspirated as much as possible. Oral therapy (metronidazole 750 mg *t.i.d.*) was administered for ten days immediately following the confirmation of the diagnosis.

Liver lesions were followed up by US every 3 days after the first needle aspiration of the abscess cavity. Two additional percutaneous needle punctures at three-day intervals were scheduled: i) when the residual cavity was not significantly reduced, reaching a diameter ≥3 cm respect to the initial volume and ii) when the first EPND resulted in more than 350 ml of fluid aspiration, so to achieve a residual abscess cavity ≤3 cm. In cases in which this protocol was not successful, catheter drainage placement was scheduled. All patients gave their written informed consent and the protocol was approved by our Institutional Review Board. Patients were discharged when steady apyretic status and liver lesion size ≤3 cm were achieved. Thereafter they were sonographically followed up every two weeks until complete normalization of hepatic scan, resulting either in a complete restoration of the US pattern, or in the presence of residual small hyperechoic scars (21). Psychological support was provided for all patients included in the study.

Results

The majority of the cases (96.43%) did not need more than two EPNDs, resulting in a short time of hospitalization and healing. Table II shows a synopsis of percutaneous echo-guided drainage results in our patients, grouped according to lesion size.

EPND was successful in all patients but two (96.43%). Two patients, both male immigrants (HIV-negative), both observed in 2007, had unmodified lesions following two EPNDs. One of them had three liver abscesses in the right lobe, ranging from 5 to 7 cm in diameter and a second had a solitary 5.1 cm abscess in the right lobe. The first patient underwent 2 EPNDs of the larger abscesses according to the scheduled protocol. He showed a temporary (7-day) clinical improvement, but 7 days later he showed reappearance of fever and leukocytosis. US disclosed a new 1.8 cm. focal liquid lesion in the left lobe of the liver and an increase in size of the largest lesion to 8 cm. Therefore two percutaneous 10F catheters were positioned on the two larger abscesses. Nevertheless, after a temporary brief improvement, the patient presented a rapid worsening of clinical condition and a sudden onset of headache, seizures, mental status changes and left side weakness. Computed tomography (CT) of the brain disclosed a lesion of 24 mm in the right basal ganglia diagnosed as a brain abscess. Medical therapy with intravenous metronidazole (22) was immediately started. Dramatically worsened clinical condition did not allow stereotactic aspiration of brain abscesses to be performed under CT guidance and general anesthesia. The patient died 4 days after the onset of neurological symptoms.

The second patient had a solitary 5.1 cm abscess in the right lobe. The patient underwent EPND of the abscess according to the scheduled protocol. He showed a temporary clinical improvement but 5 days later he presented reappearance of fever and leukocytosis. US disclosed an increase in size of the liver lesion to 6.4 cm. Therefore a percutaneous 10F catheter was positioned in the abscess. Nevertheless, the patient presented a rapid worsening of clinical conditions with hyperpyrexia and a sudden onset of continuous throbbing headache. A CT scan of the brain disclosed a lesion of 27 mm in the left parieto-occipital lobe, diagnosed as a brain abscess. Medical therapy with intravenous metronidazole (22) was immediately started. Again, stereotactic aspiration of the brain abscess under CT guidance and general anesthesia could not be performed and the patient died 3 days after the onset of neurological symptoms.

Table I. *Clinical features of our series.*

Number of patients (M/F):	56 (45/11)
Mean age (± SD): years	32±9
Duration of symptoms:	
<2 weeks	(73.2%)
>2 weeks	(26.8%)
Fever	(75%)
Abdominal pain	(83.9%)
Diarrhea	(28.6%)
Weight loss	(50%)
Leukocytosis	(62.5%)
Mortality	(3.57%)

Table II. *Synopsis of echo-guided percutaneous drainage (EPND) in our patients grouped according to lesion size.*

No. of cases	No. of abscesses	Lesion size (cm)	No. of EPND	No. of catheter drainage	Time interval between EPND (days)	Mean time of hospitalization (days)	Range of sonographic healing* (months)	Death
10	13	≤3	1	0	-	9	0.5-1.5	0
19	25	≥3 to ≤7	2	3	5-9	22	2-3	2
18	21	≥7 to ≤10	2	0	5-7	21	2-4	0
9	9	≥10	2-3**	0	3	12	1-2	0

*After first EPND; **In two cases.

Therefore, the overall mortality rate of the whole series was 3.57%. No major (*i.e.* pleural effusion, hemoperitoneum) or minor complications after procedures were observed.

Discussion

In recent years, imaging-guided percutaneous treatment (needle or catheter drainage) has replaced surgical intervention as the primary treatment for liver abscesses (23-25). Percutaneous needle aspiration under US guidance presents several advantages over catheter drainage. Needle aspiration is less invasive and less expensive with the possibility of aspirating multiple cavities in the same session; it avoids problems related to follow-up catheter care (so less medical or nursing care is required) and the clinical response is faster with quicker defervescence, relief of pain and reduced hospital stay (26). In addition, needle puncture and drainage helps in the confirmation of the diagnosis, especially when serological tests are not available or negative in early infection, even if amebic serology is highly sensitive (94%) and highly specific (95%) for the diagnosis of amebic liver abscess (27, 28).

The success rate of percutaneous needle drainage in the different series of the literature ranges from 79% to 100% (10, 20, 29, 30). The successful rate of our entire experience (1979-2007) was 96.43%. It is important to remark that the combination of EPND plus metronidazole was an efficient tool in the treatment of ALA with a success rate of 100% until 2007, when a serious complication such as brain abscess was observed. Based on our experience and on the analysis of the literature, we can consider the unfavorable outcome of two cases as rare but possible examples of failure of percutaneous therapy of ALA. It is well known that amebic brain abscesses are very rare and arise almost exclusively alongside amebic liver abscesses (<0.1% of liver abscess cases) (1, 31). Sudden onset of symptoms and rapid progression to death has been described in almost 50% of the patients with brain abscesses (31). On the other hand, improved outcomes with metronidazole therapy have been reported (32-35). In our two unsuccessfully drained patients, the substitution of needle aspiration with continuous percutaneous catheter drainage only temporarily improved clinical, laboratory and imaging findings. Moreover, intravenous metronidazole therapy, started immediately at the onset of neurological symptoms, failed in both patients and the very rapid worsening of clinical conditions did not allow us to perform stereotactic aspiration of the brain abscesses under CT guidance (33, 34, 36). Our experience confirms that brain amebic abscess is a rare and very unfavourable complication of ALA, even if combined EPND and metronidazole therapy is given. Why such a serious complication and the consequent two deaths occurred only in the last months of our twenty-nine year experience remains to be explained.

Therefore, on the basis of our present data, we can consider mortality as a possible event even in a non-endemic area such as Italy. More observational data are needed to confirm the possibility of a new epidemiological trend.

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