

Clinical Presentation, Localization and Morphology of Hepato-Pulmonary Hydatid Cysts in Patients Operated in Tehran

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Abstract: Cystic echinococcosis (CE), also known as hydatid disease, is an important zoonotic infection and public health problem in many areas of the world including Iran. A ten-year (1999–2009) retrospective study was carried out to investigate the medical files of the patients who operated on for hepatic and pulmonary cystic echinococcosis in Shohada-Tajrish and Imam Hossein hospitals, Tehran (capital of Iran). 177 patients (162 cases with hepatic hydatid cyst and 15 cases with pulmonary hydatid cyst), with a mean age of 40 years (range 6–82), were operated on for hydatid disease at two government university hospitals in Tehran. Most of our patients with hepatic hydatid cyst were pain on the right upper quadrant (32.10%), abdominal pain (26.54%) and nausea and vomiting (23.46%), whereas the commonest manifestations in those with pulmonary CE were cough (40%), dyspnea (33.33%), sputum production (33.33%), diminished breath sound (33.33%), chest pain (26.67%), haemoptysis (26.67%) and fever (26.67%). 27.16% of hepatic CE and 26.67% of pulmonary CE were asymptomatic. The present study indicated that the right lobe liver is affected in approximately three-quarters of hepatic hydatid disease. Although pulmonary cysts may establish in every lobe of the lungs, but they are more frequent in the right hemithorax. The size of the hydatid cysts ranged from 1.5 to 23 cm in their greater diameter and the largest cyst was approximately 23 × 18 cm. Among 132 intact and uncomplicated cystic echinococcosis lesions 31 (23.5%) were smaller than 6 cm, 63 (47.7%) were between 6–10 cm, 25 (18.9%) were between 11–15 cm and 13 (9.9%) larger than 15 cm.

Key words: Cystic echinococcosis • Hydatid cyst • Clinical presentation • *Echinococcus* • size of cyst • localization • Tehran • Iran

INTRODUCTION

Cystic echinococcosis (CE), also known as Hydatid disease, is a zoonotic parasitic disease of human and mammals caused by the larval stage of dog tapeworm *Echinococcus granulosus* [1-3]. The parasite is found worldwide and human CE remains a significant health problem for the Middle East and Arabic North Africa from Morocco to Egypt countries including Iran [3, 4]. Dogs play an important role in transmitting the disease in Iran. The infection rate of *Echinococcus granulosus* in the definitive host dogs was reported to range from 5% to 49% [5, 6]. Humans become infected via ingestion of eggs as a result of direct contact with infected dogs that shed

proglottids or through the ingestion of vegetables spoiled with dog feces containing eggs. When ingested, the eggs liberate their larvae in the duodenum of the intermediate host (human or sheep and so on). The larvae cross the intestinal wall and via the portal system migrate to the liver, lungs and occasionally other organs, where they are transformed into cysts.

Hydatid cyst is characterized by cystic lesions with clear boundaries, which grow 1–30 mm in diameter yearly. The hydatid cyst follows a silent clinical course until the cyst grows larger and gives pressure symptoms [1, 7]. Clinical signs and symptoms of Hydatid disease depend on the localization, size and relationships with the adjacent organs and complication [7, 8]. Human CE is

responsible for approximately 1% of admission to surgical wards, in Iran [3, 6]. Careful study of retrospective hospital records provides a useful tool to evaluate the some epidemiological and clinical features of CE.

The aim of this study was to describe the results of clinical presentation, localization and size of hydatid cysts in patients operated at two government university hospitals in Tehran in a 10-year period.

MATERIAL AND METHODS

A ten-year (1999–2009) retrospective study was carried out to investigate the medical files of the patients who operated on for CE in Shohada-Tajrish and Imam Hossein hospitals, Tehran, the capital of Iran. All operated cases of CE confirmed by the histopathology of biopsies. For each confirmed case of Hydatid disease, clinical charts, size of cyst, demographic data and anatomical location of hepatic and pulmonary cyst were collected and then analyzed. The data were analyzed using SPSS software.

RESULTS

177 patients (41.24% males and 57.76% females), with a mean age of 40 years (range 6–82), were operated on for CE at two government university hospitals in Tehran.

Most of our patients with hepatic hydatid cyst were pain on the right upper quadrant (32.10%), abdominal pain (26.54%) and nausea and vomiting (23.46%), whereas the commonest manifestations in those with pulmonary CE were cough (40%), dyspnea (33.33%), sputum production (33.33%), diminished breath sound (33.33%), chest pain (26.67%), haemoptysis (26.67%) and fever (26.67%). Of course, 27.16% of hepatic CE and 26.67% of pulmonary CE were asymptomatic. Symptoms at the time of presentation are shown in Table 1. None of the patients had reported any anaphylactoid episodes after cyst rupture or injury.

The present study indicated that the right lobe liver is affected in approximately three-quarters of hepatic CE ($P<0.01$), as shown in Figure 1. Although pulmonary cysts may establish in every lobe of the lungs, but they are more frequent in the right hemithorax (Fig. 2). The incidence of hepatic CE was significantly higher than that of Hydatid disease in pulmonary (162 *versus* 15 cases, $P<0.001$) and females (57%) had higher hepatic cysts than males (43%).

The size of the hydatid cysts ranged from 1.5 to 23 cm in their greater diameter and the largest cyst was approximately 23 × 18 cm. The majority of the cysts (47.7%) were between 6–10 cm in their greater diameter and only 9.9% of those larger than 15 cm (Table 2).

Table 1: Symptoms at the time of presentation of hepatic and pulmonary cystic echinococcosis in Tehran, Iran

Hepatic hydatidosis (n=162):		Pulmonary hydatidosis (n=15):	
Symptoms	Patients (%)	Symptoms	Patients (%)
Pain on the RUQ ^a	52 (32.10)	Cough	6 (40.00)
Abdominal pain	43 (26.54)	Dyspnoea	5 (33.33)
Nausea and vomiting	38 (23.46)	Sputum production	5 (33.33)
Appetite and weight loss	27 (16.67)	Diminished breath sound	5 (33.33)
Fever	14 (8.64)	Hemoptysis	4 (26.67)
Chile	10 (6.17)	Chest pain	4 (26.67)
Epigaster pain	11 (6.79)	Fever	4 (26.67)
Abdominal mass	8 (4.94)	Chile	2 (18.19)
Sweating	6 (3.70)	Shoulder pain	2 (18.19)
Dyspnoea	5 (3.09)	Appetite loss	2 (18.19)
Hepatomegaly	4 (2.47)	Sweating	1 (6.67)
Jaundice	3 (1.85)	Pain on the RUQ ^a	1 (6.67)
Weakness and fatigue	2 (1.23)	Fatigue	1 (6.67)
Shoulder pain	2 (1.23)	Nausea	1 (6.67)
Pain on the LUQ ^b	2 (1.23)	Asymptomatic	4 (26.67)
Skin itch and rash	2 (1.23)		
Shoulder pain	2 (1.23)		
Asymptomatic	44 (27.16)		

^aRUQ = Right upper quadrant.

^bLUQ = Left upper quadrant.

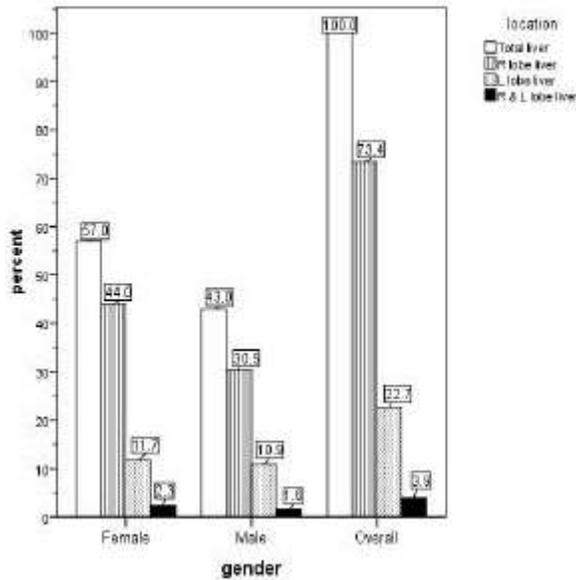


Fig. 1: Anatomical distribution of hepatic cysts among surgically confirmed cystic echinococcosis cases in Tehran, Iran (1999-2009) in the legend: R = Right; L = left

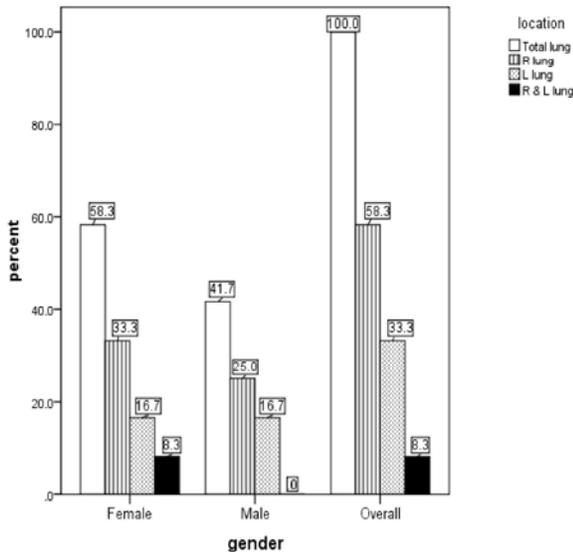


Fig. 2: Anatomical Localization of mela and female pulmonary cyst among surgically confirmed cystic echinococcosis cases in Tehran, Iran (1999-2009) in the legend: R = right; L = Left

DISCUSSION

Hydatid disease remains a continuous public health problem in endemic countries. In Iran, Cystic echinococcosis (CE) is one of the major parasitic problem that is seen in both human [3, 6, 9, 10] and livestock

animals [2, 6, 9, 11]. In much of Iran, the infection rate of *Echinococcus granulosus* in the definitive host dog was reported high, so that in Tehran, almost one in every two (48%) of the stray dogs investigated by Maleky and Moradkhan [5] was found infected.

The disease has a silent and variable clinical course. CE may be asymptomatic or incidentally diagnosed. It may also be symptomatic depending on the size, location and complications of the cyst such as rupture into biliary tract and peritoneal cavity and immunologic reactions like urticaria and anaphylactic shock [1, 7, 8]. When hydatid cysts become symptomatic, their clinical presentation varies, ranging from simple discomfort to acute abdomen.

The hydatid cyst gradually enlarges in the liver parenchyma and may cause symptoms such as dull pain in the right upper quadrant, hepatomegaly and formation of a palpable mass [12].

Analysis of hospital records for cystic echinococcosis in Tehran showed that the majority of patients with hepatic hydatid cyst had a history of pain in the right upper quadrant, abdominal pain and nausea and vomiting. Bülbüller *et al.* [13] found similar results in Turkish patients, whereas Ahmadi and Hamidi [3] showed that abdominal pain and sensation of abdominal mass being the most common symptoms in hepatic CE. These symptoms and findings are encountered in a number of conditions and physical examination especially is not helpful in differential diagnosis of the disease. Thus, hepatic CE should be suspected in those patients living in endemic areas and presenting with pain on the right upper quadrant and nausea and vomiting. In the present study, the most common clinical presentation in patients with CE of one lung or both lungs were chronic cough, dyspnea, sputum, diminished breath sound, thoracic pain and bloody sputum. This shows that the patients mostly complain of nonspecific symptoms such as cough and dyspnea. In another report from Iran of pulmonary hydatid cysts, chest pain, cough, dyspnea and haemoptysis were common presenting symptoms [3]. The symptoms of our patients somewhat are in accordance with the literature [14-16]. Therefore such complaints must be taken into account in the differential diagnosis of cough and dyspnea and CE must be considered in endemic areas.

In humans, the most frequent anatomic locations for the larval development of *E. granulosus* are the liver and lungs. Therefore, Hydatid disease in its primary hepatic or pulmonary site is of the most important clinical and pathogenic significance [3, 17]. In addition, it is characterized by a great diversity of clinical

manifestations and pathological alterations in various organs [7, 17, 18].

Overall, incidence of hepatic CE observed in this study was statistically significant more than the pulmonary CE ($P < 0.001$). The present study indicated that the right lobe liver is affected in approximately three-quarters of hepatic CE, as has been reported by Celebi *et al.* [19] in Turkey. Although pulmonary cysts may establish in every lobe of the lungs, they are more frequent in the right hemithorax [20- 22]. We found similar results in our patients.

In the present study, the majority of the cysts (47.7%) were between 6–10 cm in their greater diameter ($P < 0.05$), followed by 23.5% of those smaller than 6 cm (Table 2). The diameters of the cysts are in accordance with the literature [17, 19]. In a report from Turkey, the diameter of the cysts was smaller than 5 cm in 25.5% patients, 5 – 10 cm in 45.5% patients and larger than 10 cm in 29.1% patients [19]. A study by Raether and Hänel [17] demonstrated that from 305 hydatid lung cysts that were operated, 21.9% measured more than 10 cm in diameter. Our results showed that 28.8% of the cysts derived from CE patients were more than 10 cm in diameter and only 9.9% of them more than 15 cm in diameter (range: 15– 23 cm).

In conclusion, hydatid cyst should be in mind for differential diagnosis of tissue masses and suitable treatment particularly for patients who lived in endemic regions. The some epidemiological and clinical features of CE may be useful for assessing the cost effectiveness of designing effective public health programs to control diseases in this and other endemic areas in Iran and elsewhere.

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