



Epidemiology of hydatid disease in Najaf province / Iraq

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Abstract

One hundred and twenty four patients infected with hydatid cyst were clinically and surgically proved . Follow up was done in Al-Sadder Medical City, Najaf / Iraq during January to December 2014 . The incidence of hydatidosis in female was higher than that in males . The youngest was 5 years and the oldest was more than 70 years old . The highest age distribution of hydatidosis patients was between 21 – 30 years . The percentage of liver hydatidosis was higher (40.32 %) than other organs . Patients with large size(> 5 cm) cyst were more than those with small cyst (< 5 cm) .

Key words: Hydatid cyst, epidemiology, gender and age distribution .

Introduction

Human infections with *Echinococcus granulosus* occur as zoonoses primarily in sheep – raising areas where domestic dogs are used in herding (1) . This parasite can potentially occur in all over the world, but in the Mediterranean and Middle East countries, including Iran, parts of Africa, Latin America and China are the major foci of human infection (2) . The adult of *E. granulosus* is a worm that resides in the jejunum of the dogs, eggs ingested by intermediate hosts (cows, sheep, mice, deer, and humans) liberate an embryo in the duodenum which passes through the intestinal mucosa to enter portal circulation . Most of these embryos are trapped in the liver, the rest pass through the liver and are scattered to other organs and develop into hydatid cyst (3) . The hydatid cyst of the liver has three layers; the pseudocyst (adventitia), consisting of fibrous tissue, the result of reaction of the liver to parasite, is grey in color and blended intimately with the liver, from which it is inseparable . Ectocyst (laminated membrane) formed of the parasite itself is whitish and elastic and contain hydatid cyst is single layer of cells lining the cyst which secretes the hydatid fluid internally and laminated membrane externally (4) . Hydatid fluid is colorless or yellowish contain a complexity of protein, lipid, glucose, minerals and enzymes (5) . The hydatid cyst is normally well tolerated in humans until its development result in pressure on adjacent tissue or organs (6) . The hydatid cyst is normally involve (in human) a single cyst in one organ, and about 20-40 % of patients have multiple cyst and usually, multiple organs are involved . The liver is the most frequent site of hydatid cyst (50-70%) followed by the lungs (25%) and, less usually in spleen, kidney, heart, bones, and central nervous system . About 25% of the patients with hepatic cysts in their lungs (2) . In Iraq hydatidosis constitute one of the major endemic disease and its seriousness in both humans and animals has been recognized by many workers,(7,8) . The incidence of hydatid disease was 8 per 1000 patients admitted for all reasons to the Medical City Teaching Hospital in Baghdad (8) . He showed that the disease is more common in young and middle age group . (9) reported that 90 patients with hepatic hydatid cyst were treated surgically from May 2009 in first surgical unit at Baghdad Teaching Hospital . 55(61.3% females) and 35(38.7% males) . The aim of the study to evaluate the percentage of the parasite infection in Najaf Province / Iraq .

Patients and Methods

One hundred and twenty four patients (27 males and 97 females), age range (5->70 years) with hydatidosis were confirmed surgically from Al-Sadder Medical City in Najaf / Iraq, during January to December 2014 . The cysts were in liver, lungs, heart, spleen, kidney, leg, omentum, and brain. A questionnaire sheet, was filled by each individual studies concerning its' age, sex, medical history (disease, medication, surgeries of hydatidosis and time of sample collection) and clinical notes including cyst location and size.

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Results

Gender distribution

The total number of hydatidosis patients included in this study was 124, 97(78.3% females) and 27(21.7% males) (Table 1.) . The result showed that more females were found to be infected than males .

Age distribution

The ages of patients studies were between 5 and more than 70 years . The majority of cases 32(25.8%) which were found to be infected (male and female) at the age groups 21-30 years . The youngest age was 5 years and the oldest was more than 70 years old (Table 2) .

Site of infection

Different organs were infected with hydatid disease, but the number of patients with liver hydatidosis had the highest percentage 50 (40.32 %) when compared to other sites of infection, followed by lung 40 (32.25 %) and kidney 20 (16.12 %) . The other organs were spleen, brain, omentum and leg, the percentage 7(5.64 %), 2(1.61 %), 4(3.22 %) and 1(0.80 %) respectively (Table 3) .

Size and site of cyst

Only 50 cyst were measured from the total of 124 patients . 23 (46.00 %) had cysts less than 5 cm in diameter, whereas the remaining 27(54.00%) had cysts larger than 5 cm in diameter, (Table 4) . From a total of 22 liver cyst, 12(70.58%) has less than 5 cm in diameter and 10(45.45%) has more than 5 cm, whereas from a total of 17 lungs cyst, 5(29.41%) had less than 5 cm in diameter, 12(54.54%) had more than 5 cm in size (Table 5) .

Table (1) : Gender distribution of 124 hydatidosis patients from Al-Sadder Medical City in Najaf / Iraq .

Females (%)	Males (%)	Ratio	Total
97(78.3 %)	27(21.7 %)	4:1	124

Table (2) : Distribution of 124hydatidosis patients according to age and gender from Al-Sadder Medical City in Najaf / Iraq .

Age (year)	Male	Female	Total
1-10	4(30.76%)	9(69.23%)	13
11-20	6(26.08%)	17(73.91%)	23
21-30	6(18.75%)	26(81.25%)	32
31-40	3(11.53%)	23(88.46%)	26
41-50	2(11.11%)	16(88.88%)	18
51-60	2(28.57%)	5(71.42%)	7
61-70	3(75.00%)	1(25%)	4
71- >	1(100%)	0(0.00%)	1
Total	27	97	124



Table (3) : Distribution of 124 hydatidosis patients according to site and gender from Al-Sadder Medical City / Najaf .

Site of Infection	Male (%)	Female (%)	Total (%)
Liver	8(16.00%)	42(84.00%)	50(40.32%)
Lung	8(20.00%)	32(80.00%)	40(32.25%)
Kidney	6(30.00%)	14(70.00%)	20(16.12%)
Spleen	2(28.57%)	5(71.42%)	7(5.64%)
Brain	1(50.00%)	1(50.00%)	2(1.61%)
Omentum	1(25.00%)	3(75.00%)	4(3.22%)
Leg	1(100%)	0(0.00%)	1(0.80%)
Total	27	97	124

Table (4) : Distribution of hydatidosis patients according to size of cysts and gender of 50 patients from Al-Sadder Medical City in Najaf / Iraq .

Cyst size (cm)	Male (%)	Female (%)	Total (%)
< 5	4(17.39%)	19(82.60%)	23(46.00%)
> 5	8(29.62%)	19(70.37%)	27(54.00%)
Total	12	38	50

Table (5) : Distribution of hydatidosis patients according to size of cysts and site of infection of 39 patients from Al-Sadder Medical City in Najaf / Iraq .

Cyst size (cm)	Liver (%)	Lung (%)	Total (%)
< 5	12(70.58%)	5(29.41%)	17(43.58%)
> 5	10(45.45%)	12(54.54%)	22(56.41%)
Total	22	17	39

Discussion

In this study, there are a marked increase in the incidence of the hydatid disease in Najaf province, this may due to lack appropriate personal hygiene practice to prevent ingestion of the eggs, and the practice of feeding dogs potentially contaminated viscera . Poor educational program for inhabitant in area (at risk) for transmission of parasite (11) . Insufficient meat inspection, poor dog management and in appropriate legislation (12) . No active collaboration between veterinarians and public health workers (13) . Available stray dogs or sheep dogs (14) . All these are responsible for transmission of disease .The gender distribution showed that the predominance of hydatidosis was in females (78.3%) than in males (21.7%) . This has been also observed by (8,16,17), where they found that the infection rate was higher in females than in males . This may be due to the social life in our district where the females are confined to house working and this will make them more exposed to the source of infection especially in rural area .The age range of the cases studies was from 5 years up to 70 years . The highest prevalence with regard to age distribution was between 21-30 years . It was shown that the age range between 11-40 years was the age of highest incidence (18,19), while (8) and (17) showed that the highest rate of infection was between 20-30 years . The study showed that most of the patients had hydatidosis of the liver, followed by the lungs, kidney, spleen, brain, omentum and leg . This finding is well documented by (2,19) . This is probably because most frequently the oncosphere enters the portal vein in the liver, the first capillary filter . If it passes the liver, it reaches the lung and other distant foci (19,20) .The cysts of *E.granulosus* never infiltrate or invade the tissues of the host and hence exist as a foreign body . In this study a high percentage of our patients had large size cyst (more than 5 cm in diameter) . These large cysts were seen more in the lung than in the liver . The cyst morphological characteristics are largely determined by the resistance offered by the involved organs . In the soft parenchymatous tissues of the lungs, the cysts expand rapidly and may



become very large . The firm texture of the liver, on the other hand, exerts a definite restraining influence on the expansion of the cyst, hence, they remain rather small (21) .

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