
Hydatid Disease: A Retrospective Study of Three Hospitals in Baghdad during 2003-2008

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Abstract:

Background: Hydatid disease is an infection caused by the larval stage of several species of the genus *Echinococcus*. It is one of the most important parasitic diseases, especially in the under-developed and developing countries, as man and wide range of vertebrates act as intermediate hosts; dogs, wolves and foxes being the final hosts. The disease is considered as a major public health and economic problem in many countries. The disease epidemiology is lacking and few studies on the rate of infection were recorded from patients admitted to major hospitals in Baghdad.

Objectives: This Study was carried out to assess the seriousness of this disease in Baghdad and to study the distribution of the disease according to age, sex, residency, occupation, organ affected, diameter of the cyst, single or multiple and clinical manifestations.

Materials and Methods: Three major hospitals in Baghdad were chosen for this study; AL-Kadhmyia Teaching Hospital, Baghdad Teaching Hospital and AL-Yarmouk Teaching Hospital. These hospitals are the largest in Iraq with a capacity of about 2062 beds. The recording system in these hospitals is very good, allowing for retrospective study. The records of patients admitted for surgery of these three hospitals were studied for a period of five years (2003-2008). From each patient record, the following information were recorded: age, sex, residence, occupation, organ affected, diameter of the cyst, single or multiple and clinical manifestations.

Results: Hydatid disease was found to be still one of the major health problems. The total number of surgically proved cases of Hydatid cysts was 855; 460 cases from AL-Yarmouk Teaching Hospital, 263 cases from Baghdad Teaching Hospital and 132 cases from AL-Kadhmyia Teaching Hospital. The total numbers of surgically proved hydatid disease were 855, with a yearly average of 171 cases. The disease affected all age groups, but the majority was between the ages of 20-29 years. The number of females infected was more than males. Generally the high percentage of infection was found in the lung, and then the liver. In the females, the liver was more frequently infected than the males, while the lung was more frequently infected in the male than the females. The highest size of hydatid cysts was found in the liver (more than 20 cm.), while the lowest size found in the lung (less than 5 cm). The highest number of infected patients was farmers. Also this study indicated that, from the lung infected patients 226, 201 liver infected cases and 31 infected in other sites were asymptomatic.

Conclusion: It need to plan a program and an effective control, prevention and finally if possible eradication of the disease. A nation wide study should be conducted to determine the incidence and prevalence of the disease in human, as well as in animals. Finally new methods for disease diagnosis should be introduced.

Key word: Hydatid Disease, Retrospective Study, Three Hospitals, Baghdad.

Introduction:

Hydatid disease or hydatidosis is an infection caused by the larval stage of several species of the genus *Echinococcus*. It is one of the most important parasitic diseases, especially in the under-developed and developing countries, as man and wide range of vertebrates act as intermediate hosts; dogs, wolves and foxes being the final hosts.

The disease has a cosmopolitan distribution. It is considered as a major public health and economic problem in many countries of the Middle East, as well as in most African and south-east Asian countries^[1], and has been reported from every continent^[2]. In Iraq, this disease was studied by many workers, and recognized as one of the most important zoonosis, especially among people living in rural areas^[3, 4, 5].

These workers studied the disease and the parasite from different aspects including epidemiology, new methods of diagnosis, biology of the parasite, chemotherapy and intraspecific variation^[6, 7].

Hydatidosis is primarily reported from areas where sheep and other herbivorous are raised and where such animals are in close contact with dogs or other wild canidae. The risk groups are those who are in close contact with dogs, the definitive host which harbor the adult *E. granulosus*. Several drugs have been used against hydatid disease in human and laboratory animals. Their effects remain in doubt and thus surgical therapy is still the best^[8, 9].

Despite the above studies on the disease and the parasite, still many aspects of the disease epidemiology

are lacking and few studies on the rate of infection were recorded from patients admitted to major hospitals in Baghdad. A retrospective study of patients attending the Medical Teaching Hospitals over 10 years reported 8/1000 patients were infected with hydatidosis^[4].

But still the disease represents a major public health problem in Iraq, as a matter of fact; the recorded rate is indeed higher than the rate of many countries^[10].

This Study was carried out to assess the seriousness of this disease in Baghdad and to study the distribution of the disease according to age, sex, residency, organ affected, size of the cyst, single or multiple and clinical manifestations.

Subjects and Method:

Three major hospitals in Baghdad were chosen for this study; AL-Kadhmyia Teaching Hospital, Baghdad Teaching Hospital and AL-Yarmouk Teaching Hospital. These hospitals are the largest in Iraq with a capacity of about 2062 beds.

The recording system in these hospitals is very good, allowing for retrospective study.

The records of patients admitted for surgery of these three hospitals were reviewed for a period of five years (2003-2008), From each patient record, the following information were recorded: age, sex, residency, organ affected, size of the cyst, single or multiple and clinical manifestations, Statistical analysis; data were presented in terms of observed frequencies and percentages.

This Study is retrospective study (descriptive study).

Results:

Record review showed a total of 855 operated on and proved to be positive hydatid cyst in these three hospitals during the five years study period (2003-2008).

The total number of surgically proved cases of hydatid cysts was 855. Eighty five cases during 2003, 101 cases during 2004, 125 cases during 2005, 153 cases during 2006, 160 cases during 2007 and 231 cases during 2008. Four hundred sixty cases from AL-Yarmouk Teaching Hospital, 263 cases from Baghdad Teaching Hospital and 132 cases from Al-Kadhmyia Teaching Hospital. This gives an annual surgical case of 171 per year and the rate for each hospital about 26 for Al-Kadhmyia, 52 for Baghdad Teaching Hospital and 92 for AL-Yarmouk Teaching Hospital.

The prevalence of disease was highest (32.4%) among the age group 20-29 years (Table 1).

About 10.2% of the cases were below the age of 10 years, and 17.3% above the age of 40 years. Females were more frequently infected than males (63.9% vs. 36.1%) (Table 1).

Most of these cases came from the rural area in or around Baghdad city 527 (61.6%) (Table 2).

From the 855 surgically proved hydatid cyst cases, 821 were solitary and large, and 34 were with multiple small cysts (Table 3). There were more cases recorded in the lung (51.7%) than in the liver (41.8%). The other sites (56 cases) were 20 in Spleen, 12 in peritoneum, 11 in kidneys, 3 gall bladder, 3 surface of chest, 2 intestine, 2 ovary, 2 diaphragm and one heart (Figure 1).

In the females, the liver was more frequently infected than the males (45.2% vs. 35, 6%), while the lung was more frequently infected in the male than the females (56.3 vs. 49.1%) (Table 4).

The highest size of hydatid cysts was found in the liver (more than 20 cm.), while the lowest size found in the lung (less than 5 cm.) (Table 5).

The highest number of infected patients were farmers (220 females' vs. 110 males) (Table 6).

Also this study indicated that, 226 lung infected patients, 201 liver infected cases and 31 infected in other sites and they were asymptomatic (Tables 7, 8 and 9).

Table 1: Age and sex distribution of hydatid cyst patients in three hospitals in Baghdad.

Age group (years)	Sex		Total (%)
	Male (%)	Female (%)	
<10	48 (15.5)	39 (7.1)	87(10.2)
10-19	78 (25.2)	112 (20.5)	190(22.2)
20-29	83 (26.9)	194 (35.5)	277 (32.4)
30-39	50 (16.2)	103 (18.9)	153(17.9)
≥40	50 (16.2)	98 (17.9)	148(17.3)
Total	309 (36.1%)	546 (63.9%)	855

Table 2: Distribution of hydatid cysts cases according to place of residency.

	Males	Females	Total
Rural areas	191 (34.9)	336 (63.7)	527 (61.6)
Urban areas	118 (35.9)	210 (64.1)	328 (38.4)
Total	309 (36.1)	546 (63.9)	855

P= 0.937(not significant).

Table3: Distribution of hydatid cysts according to organ involvement of patients.

Organs	Multiple & small	Solitary & large	Total
Lung	7	435	442(51.7)
Liver	12	345	357(41.8)
Spleen	5	15	20 (2.3)
Peritoneum	2	10	12(1.9)
Kidney	4	7	11(1.3)
Gall bladder	1	2	3(0.4)
Chest wall	3	0	3(0.4)
Small intestine	0	2	2(0.2)
Ovary	0	2	2(0.2)
Sub diaphragmatic	0	2	2(0.2)
Pericardium	0	1	1(0.1)
Total	34	821	855

Table 4: Distribution of hydatid cysts according to organ involvement and sex of patients.

Organs	Sex		Total (%)
	Female %	Male %	
Lung	268(49.1)	174(56.3)	442(51.7)
Liver	247 (45.2)	110(35.6)	357(41.8)
Other sites	31(5.7)	25(8.1)	56 (6.5)
Total	546	309	855

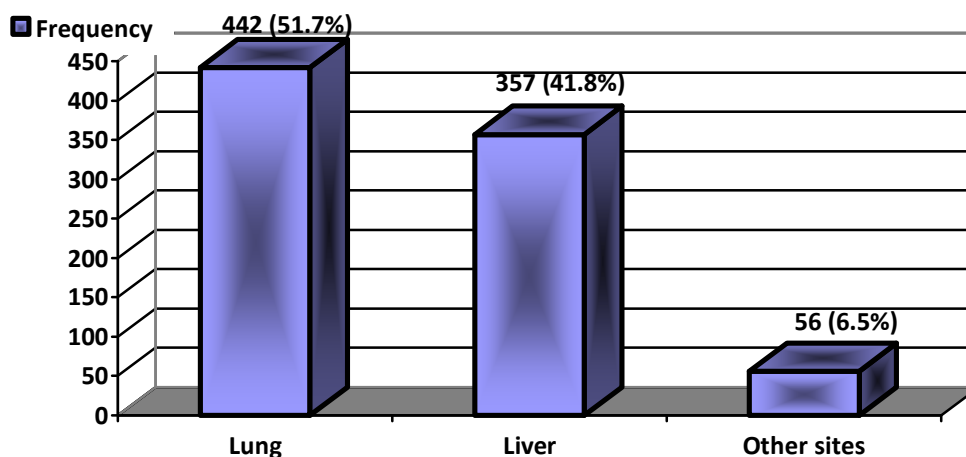


Figure 1: Site distribution of hydatid cysts of 855 patients in three hospitals in Baghdad.

Table 5: Diameter of hydatid cysts in different organs of patients.

Organs	Diameter of cyst (cm)				Total (855)
	<5.0	5.0-9.9	10.0-14.9	≥15.0	
Lung	115	292	35	0	442
Liver	32	70	200	55	357
Spleen	6	2	12	0	20
Peritoneum	0	0	9	3	12
Kidney	3	8	0	0	11
Gall bladder	3	0	0	0	3
Chest wall	3	0	0	0	3
Small intestine	2	0	0	0	2
Ovary	2	0	0	0	2
Sub diaphragmatic	2	0	0	0	2
Pericardium	1	0	0	0	1

Table 6: The distribution of patients according to occupation.

Occupations	Females	Males
Farmer	220	110
House wife	195	—
Teacher	104	89
Officer	—	30
Solider	—	51
Doctor	1	—
Laborer	26	29
Total	546 (63.9)	309 (36.1)

Table 7: Clinical manifestations of lung hydatid cysts.

Clinical manifestations	No. of patients (%)
Asymptomatic	226 (51.1)
Chest pain	82 (18.6)
Cough	65 (14.7)
Dyspnea	48 (10.9)
Trauma on chest	5 (1.1)
Haemoptisis	16 (3.6)
Total	442

Table 8: Clinical manifestations of liver hydatid cysts.

Clinical manifestations	No. of patients
Asymptomatic	201 (56.3)
Right hypochondrial pain	66 (18.5)
Obstruction jaundice	42 (11.8)
Dyspnea	16 (4.5)
Mass in the abdomen	32 (9.0)
Total	357

Table 9: Clinical manifestations of other sites hydatid cysts.

Clinical manifestations	No. of patients
Asymptomatic	31 (55.4)
Mass in the abdomen	11 (19.6)
Mass in chest	3 (5.4)
Cholecystitis	2 (3.6)
Menorrhagia	2 (3.6)
Arrhythmia	1 (1.8)
Dysurea	6 (10.7)
Total	56

Discussion:

In order to have a good control program and final eradication of the disease, a nation wide study is essential to determine the incidence and prevalence of the disease in human and animals. Thus, an accurate and reliable record system to attain this objective is needed. Consequently this will give a good idea about the gravity of the problem and its impact on health. Studying the hospital records is one of the most reliable indices for the disease. Although, several studies has been done on human hydatid disease [5, 11, 12], but this source of information is still considered to be highly reliable source of data on hydatidosis in human, because incorrect diagnosis in surgical cases of hydatid disease is rare.

The records of three major hospitals in Baghdad were chosen for two reasons; one is the recording system of these hospitals is accurate and reliable, and second to compare the results of this study with the previous one for the five years period. Generally the number of cases of hydatid cyst recorded was higher than the previous study, which was done in Baghdad teaching hospital [4].

The annual surgical case rate was 171 in spite of the fact, that this study covered five years period, which is longer than the previous study. Other workers [13] showed that during 1980-1982 the rate of infection was 0.4%. A similar study conducted in Mosul General Hospital showed that the overall incidence of the disease was 1.4% [3]. Finally, Hashim [5] recorded 814 patients with hydatid disease in five provinces of Iraq during the period 1987-1991. The present results indicate that hydatid disease is still one of the major health problems, in spite of the fact that there was general improvement of hygiene and sanitation both on the personal and community levels.

For the age distribution with hydatid disease, it was found that the majority (29.6%) were on the age group of (20-29), and the lowest (6.7%) above the age of 50

years. It seems generally that there was no change in the pattern of the previous studies, whether in Iraq or in most of the countries in the regions [4, 14, 15, 16], while some other investigators was reported that the majority were between the age of (20-40) years and that could be due to chronic nature of the disease [6].

Age resistance to hydatid disease is still a matter of speculation. The lowest (10.2%) was below the age of 10 years old, with little evidence to support it and most of the studies were based on surgically proved cases of the hospital records. Experimentally, it was found that younger mice were more susceptible to infection with *E. granulosus* scolices than the older one. This may be due to host immune response maturation [16, 17]. As for the sex distribution, the females were more frequently infected with hydatid disease (63.1 %) than males (36.9%), especially in the rural areas, since they work in the farms and house more than males. This finding is in agreement with previous studies by many workers in Iraq and other countries [17, 18, 19, 20]. However, this result does not agree with [21, 22] where they found more in males than in females. In addition, still some workers reported that there was no difference in the frequency of infection between males and females [22]. Other workers reported that testosterone seems to increase the susceptibility of male mice to infection than females [19, 20]. It seems that different results were reported by different authors concerning the sex. Thus, such difference may be due to some epidemiological reasons, such as occupation or due to the fact that more females were admitted than the males which were not reported in this study.

One of the interesting findings concerning the site of infection, is that the highest percentage of infection was in the lungs (51.7%) followed by the liver (41.8%), and even with the addition of the other sites (6.5%) to the liver (such as spleen), still the percentage of infection in the lung proved to be higher. This finding is the average of the results of the studied three hospitals, which agree with the previous study at the medical city teaching hospital [4]. On the other hand, from two of the hospitals, Al-Kadhmyia and Baghdad teaching, the percentage of infection was higher in the liver, a finding which agrees with the majority of the investigators. However, at AL-Yarmouk Teaching Hospital, the majority of hydatid cysts were in the lung (94.1%) This is probably explained by the fact that chest surgery cases are referred to The Cardio-thoracic Surgery Department in this hospital. Hence more cases were reported in the lung than in the liver. From this preliminary and restricted study in only three hospitals in Baghdad, one could conclude that hydatid disease is still one of the major public health problems in Iraq. There is no doubt, that these data should provide some information as a base line for future study. In addition, these results may not necessarily reflect the true picture of the disease in Iraq and even in Baghdad. In conclusion, it need to plan a program and an effective control, prevention and finally if possible eradication of the disease. A nation wide study should be conducted to determine the incidence and prevalence of the disease in human, as well as in animals. Finally new methods for disease diagnosis should be introduced.

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