THE STUDY OF EPIDEMIOLOGY AND HYDATID CYST PRIMARY AND FINAL DIAGNOSIS IN PATIENTS HOSPITALIZED IN THE SURGERY UNIT OF SHAHID DANESHVARI HOSPITAL, TEHRAN, IRAN 2007 TO 2017

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Abstract:

Hydatid cyst disease is of great importance; it infects very critical organs in humans, especially liver and lungs, and as for animals, it inflicts significant losses on animal husbandry economy. Thus, providing accurate diagnosis is of great importance for treating this disease and preventing its complications. The present study aimed at studying the epidemiology and hydatid cyst first and final diagnosis in patients hospitalized in the surgery unit of Daneshvari Hospital, Tehran from 2007 to 2017. The present study is retrospective cross-sectional study. The statistical population of the present study was all the patients suffering from hydatid cyst who were hospitalized at Daneshvari Hospital and underwent surgery from2007 to 2017. From the 110 patients suffering from hydatid cyst hospitalized, 48 were male, and 62were female. With respect to the infected organ, 53 patients were infected in liver, 48 patients were infected in lungs, and 9 patients were infected in both liver and lungs. As many as 98 patients had one cyst, and 12 patients had more than one cyst. 52 patients with medical ultrasound, 47 patients with medical ultrasound and CT scan, 10 patients with chest x-ray, and one patient with serological testing. The total findings of the study indicate that given the patients' profiles and clinical symptoms, the diagnosis of this disease was desirable and is consistent with other studies. In cases, where it was impossible to diagnose hydatid cyst with clinical and Para clinical evidence, it is of great help to the geographical as well as epidemiological status of the disease in the region.

Key words: *Epidemiology, Hydatid Cyst, Diagnosis, Tehran.*

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INTRODUCTION:

Hydatid cyst is one of the zoonotic parasitic diseases created by the larval development of Echinococcus granulosus [1, 2]. This parasite's adult worm lives in the intestine of dogs and canines as the final hosts, and the herbivores have the role of main mediator's hosts [3]. Humans, as the mediator hosts, are infected accidentally either through drinking water or eating vegetables contaminated with parasite eggs or having direct contact with dogs [4]. Hydatid cyst usually infects liver and lungs, and the clinical and epidemiological symptom of this disease depends on the extent of infection, size and place of hydatid cyst formation [5]. Human's infection with this disease has been reported from different regions in Iran, but owing to the inefficient diagnostic methods, the degree of infection is not exactly clear. However, the studies conducted suggest that in every 100 thousand people, 1.12 suffer from hydatid cyst [6]. Hydatid cyst disease is of great importance; it infects very critical organs in humans, especially liver and lungs, and as for animals, it inflicts significant losses on animal husbandry economy [7]. Moreover, although there are some new treatment methods, surgery is the commonly used treatment method for this disease inflicting huge losses on the countries' economy and health [8]. According to some studies, hydatid cyst has evident clinical-radiological characteristics and unique treatment plans. That is why the doctors often find it difficult to make definitive diagnosis for this disease [9]. Thus, providing accurate diagnosis is of great importance for treating this disease and preventing its complications. Thus, given the annual rate of this disease, relapse cases, and the serious complications of inaccurate diagnosis, the present study aimed at studying the epidemiology and hydatid cyst first and final diagnosis in patients hospitalized in the surgery unit of Shahid Daneshvari Hospital, Tehran, Iran from 2007 to 2017.

MATERIALS AND METHODS:

The present study is retrospective cross-sectional study. The statistical population of the present study was all the patients suffering from hydatid cyst who were hospitalized at Shahid Daneshvari Hospital and underwent surgery from 2007 to 2017. In the present study, the data were collected through referring to the medical records of the patients. They were then recorded in the checklists prepared for this purpose. The data includes demographic characteristics (such as gender, age, job, place of residence, and nationality), items related to hydatid cyst (the infected organ and number of cysts), and questions on the symptoms, clinical symptoms, date of reference, date of discharge, length of stay in hospitals, primary diagnosis, tests applied, test results, infected area, and final diagnosis. Frequency index, relative frequency, and SPSS were used for data analysis. The names of the patients were kept confidential with the researchers.

RESULTS:

From the 110 patients suffering from hydatid cyst hospitalized at Shahid Daneshvari Hospital from 2007 to 2017, 48 (%43) were male, and 62 (%57) were female. The infection was most frequently observed in 31-40 (%32) and under 10 age groups (%24) (Table 1). The infection was %41 in farmers; this rate of infection was quite significant comparing to other jobs (Table 1). With respect to the infected organ, 53 patients were infected in liver (%48), 48 patients were infected in lungs (%44), and 9 patients were infected in both liver and lungs (%8). As many as 98 patients (%89) had one cyst, and 12 patients (%11) had more than one cyst. As many as 62 patients were villagers, and 48 patients were townspeople. From the 62 villagers and 48 townspeople, 38 villagers (%61) and 18 townspeople (%37) had direct contact with dogs. Clinical symptoms in patients suffering from hydatid cyst include 74 cases of stomachaches (%67), 8 cases of coughing and chest pain (%7), and 24 cases of fever and lack of appetite (%21) together with the aforementioned symptoms. Liver hytadid cyst diagnosis was done using the following methods: 52 patients with medical ultrasound (%47), 47 patients with medical ultrasound and CT scan (%42), 10 patients with chest x-ray (%9), and one patient with serological testing (%0.09) (Table 3). Blood cell count was normal in 82 patients (%74), and the number of white blood cells was more than 12 thousand only in 28 cases (%26). The average number of white blood cells was 54329-548. The average lengths of stay were as follows: 5-10 days for 40 patients (%45) and more than 10 days for 26 patients (%24). The longest stay was 25 days, and the shortest was 1 day. In the present study, the most frequently used diagnostic test was medical ultrasound used for 52 patients (%47), and then, we have medical ultrasound and CT scan which were used for 47 patients (%42).

Table 1: The frequency distribution of hydatid cyst according to the patient's gender and age.

Gender	Male	Female	Total (number-percentage)
≤10	2	1	2-3%
10-20	8	12	18-20%
21-30	11	13	22-24%
31-40	17	18	32-35%
41-50	8	10	17-18%
51-60	6	4	9-10%
Total	52	58	100-110%

Table 2: The frequency distribution of hydatid cyst based on the patients' job and gender.

Job	Housewife	Stockbreeder	Worker	Student	Farmer	Self-employed	Total
Gender	Number (percentage)	Number (percentage)	Number (percentage)	Number (percentage)	Number (percentage)	Number (percentage)	
Male	0	14(12%)	7(6%)	4(4%)	25(23%)	3(3%)	53(48%)
Female	18(17%)	8(7%)	4(4%)	6(5%)	20(18%)	1(1%)	57(52%)
Total	18(16%)	22(20%)	11(10%)	10(9%)	45(41%)	4(4%)	110(100%)

Table 3: Frequency of diagnostic tests used for patients suffering from hydatid cyst, surgery unit

Diagnostic test	Frequency	Percentage
Medical ultrasound	52	47
Medical ultrasound and CT scan	47	42
Serology	1	1
Chest x-ray and medical ultrasound	10	10
Total	110	100

DISCUSSION:

During a ten-year time span 2007-2017, 110 people were hospitalized for hydatid cyst. In the present study, the women comprise more than a half (%58) of the statistical population; the statistical population is similar to those of the other studies done in Yazd, Chaharmahal and Bakhtiari, and Urmia [10]. However, in a study conducted by Naeini et al, more male infection cases have been reported [11]. Women are more likely to be infected with hydatid cyst for a variety of reasons including: having more contact with infected soil, more contact with infected fleece while milking, cleaning vegetables, sweeping village houses, using mud for washing dishes, and dust eating habit. In

the present study, all the patients had undergone a surgery owing to hydatid cyst. The highest frequency of infection with hydatid cyst was observed in 31-40 age group which was followed by 21-30 age group. This indicates that the infected individuals had spent the best years of their lives dealing with this disease. This factor is can play an important role in the villagers' household economy through reducing working hours as well as the amount of work done. The findings of the present study are consistent with those of other studies done in Yazd, Kerman, Yasuj. Although the age distribution of the present study is consistent with many other studies, it is different from that of the study conducted by Dowlatabadi et al in Kashan;

the main reason behind this can be the age difference of more active classes of stockmen and stockbreeders in the third and fourth decade of their lives in this province [12]. In the present study the most frequently used diagnostic tests were medical ultrasound (52 cases, %47) and medical ultrasound with CT scan (47 cases, %42). However, in 10 cases medical ultrasound was used with chest x-rays. With regard to conducting CT scan and medical ultrasound as the most commonly used methods of diagnosing abdominal hytadid cyst, the findings of this study are consistent with those of Davoodabadi [13]. The number of hydatid cyst cases diagnosed with medical ultrasound was 52 cases (%47). The sensitivity of medical ultrasound was %92, and this is consistent with the findings of Davoodabadi (%98) and Omid (%95) [14, 15]. Most of the studies have reported the diagnostic power of CT scan for hydatid cyst as %100 [16]. CT scan test is requested when the sonographer recommends it. In a study that was done by Siluch on 13000 patients who had undergone hydatid cyst surgery, it was made clear that Elisa and indirect hemagglutination were the most reliable serological tests of the disease primary diagnosis and relapse [17]. Furthermore, dot-Elisa test has a higher level of sensitivity in comparison with other serological methods. The study done by Salami recommends dot-Elisa test as an inexpensive, fast test with %100 sensitivity for hydatid cyst diagnosis in humans [18]. The doctors prefer sonographic tests to serological ones, possibly owing to differential diagnoses and the awareness of the cyst placement status. With regard to lung hydatid cyst, chest x-ray is the most frequently used method of diagnosis. In the present study, the prevalence of lung hydatid cyst has been reported as %44. Diagnostic method of medical ultrasound and chest x-ray was done in 10 cases (%10). In the study done by Sokuti, the sensitivity of chest x-ray for patients suffering from lung hydatid cyst with complications was %73; as for the patients suffering from lung hydatid cyst without complications, it was %78 [19]. There were some limitations in the present study. They include incomplete information of the medical records, and the impossibility of validating the information forms.

CONCLUSION:

The total findings of the study indicate that given the patients' profiles and clinical symptoms, the diagnosis of this disease was desirable and is consistent with other studies. However, it calls for more studies at the levels of Para-clinical tests (medical ultrasound etc.). In cases, where it was impossible to diagnose hydatid cyst with clinical and Para-clinical evidence, it is of great help to the geographical as well as epidemiological status of the disease in the region. Moreover, given the poor reduction of human hydatid cyst cases in Iran, it seems like that taking measure like training people, monitoring livestock slaughter, and killing stray dogs are necessary.

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