

Examination of atypical located hydatid cyst disease in Eastern Turkey

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ABSTRACT

The hydatid cyst disease is a zoonotic infection caused by *Echinococcus granulosus*. It usually causes infection in the liver and lungs. To a lesser extent, it may cause infection in the spleen, heart, bones and central nervous system. In this study, serological examination of hydatid cyst cases showing localization out of liver and lungs has been aimed. The clinical, radiological, and serological findings of a total 435 patients included to the examination between May 2010 and 2013, have been evaluated together. The indirect hemagglutination (IHA) test results were retrospectively scanned from hospital database of 288 patients among those who have received treatment because of hydatid cyst. The findings have been evaluated statistically through Chi-square trend analysis method according to ages and their localizations. According to the data obtained, 12 (7.2%) of 288 patients showing atypical localization in IHA (Indirect hemagglutination) results were positive and 13(9.6%) of them were found negative ($p=3.393$). According to the IHA results of 263 patients showing localization in liver and lungs 151 of them were positive and 112 of them were negative ($p=3.393$). The hydatid cyst is a disease that can be seen in every age range, besides, atypical localizations can also be seen in any age range. In terms of protecting public health, the public's awareness should be raised and a greater emphasis on prevention methods are needed.

Key Words: Atypical hydatid cyst, IHA, seroprevalence

Introduction

The hydatid cyst disease is a tissue and organ infestation caused by larvae of *Echinococcus granulosus* parasite. It is frequently seen in countries where sanitation is inadequate and animal husbandry is common (1,2). Hydatid cyst shows a wide spread in our country. The disease is most prevalent in the regions called Eastern Anatolia, Southeastern Anatolia and Central Anatolia (3,4,5,6). It is reported that the parasite is able to localize in virtually any organ such as lungs, kidney, spleen, brain, bones and heart, but especially in liver first. Although it is commonly described as a benign disorder, it may show high morbidity and mortality caused by unexpected serious complications. The location and size of the lesion determines the clinical approach. The diagnosis is easy in most cases and it can be treated by a simple surgery procedure. However, in some cases, different pathologies merge

together, and so there occurs some diagnosis and treatment problems, or it is recognized by chance while investigating a different etiology. Different localizations may cause different radiological images and different clinical conditions. It is required to keep in mind, that diagnosis methods can be accurate or inaccurate positive and these features must be recognized in order to determine atypical localizations (4,7).

The main goal of our study is to emphasize hydatid cyst cases showing atypical localization, which is accepted as an important health problem in our country, and to provide information about the prevalence of the hydatid cyst disease in our region.

Materials and methods

The test results of a total 435 patients admitted to the hospital on suspicion of hydatid cyst between May 2010 and 2013, have been evaluated

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retrospectively from hospital's database. The clinical, radiological findings have been evaluated together with serological indirect hemagglutination test results. Serum dilutions of 1/16 's were considered positive. The localizations seen outer of liver and lungs organ involvements have been accepted as atypical. The findings have been evaluated statistically through Chi-square trend analysis method using SPSS 18 software package according to the organ and tissues that cyst is localized, plus considering the ages of the patients.

Results

According to the data obtained, 288 patients are taken under treatment with the diagnosis of hydatid cyst, and atypical localization was seen in 25(8.3%) of those patients. The indirect hemagglutination result was positive for 12 of 25 patients, and negative for 13 of them. The cross-reactions were accepted as the main cause. Those who were taken to treatment, spread information is such like that: spleen localization 10 (3.4%) cases, the brain localization was detected in 3(1%) cases, kidney localization was detected in 3(1%) cases, the uterus localization was detected in 8(2.4%) cases, heart localization was detected in 1(0.3). According to the IHA test results, spleen localization was detected in 5(3%) cases, the brain localization was detected in 2(1.2%), kidney localization was detected in 1(0.6%) cases, uterus

localization was detected in 4(2.4%) cases and obtained as positive (p=3.393) (Table 1). Other than that, the remaining liver and lung involvements in 152 of the 263 people IHA positivity was observed. 238 (83%) among all of the patients who received treatment were found with liver involvement, and 25(8.7%) of them were observed in the lung involvement. According to the IHA test results, 139(85.4%) of those showing liver involvement and 12(7.3%) of those showing lung involvement obtained as positive (p = 3.393) (Table 2).

When analyzed according to age groups, the splenic involvement was seen in 2(0.7%) cases among 10-19 age range, in 2(0.7%) cases among 20-29 age range, in 5(1.7%) cases among 40 years and older age range. The kidney involvement was seen in 1(0.3%) case among 0-9 age range, in 2(0.7%) cases among 10-19 age range. The uterine involvement was defined as 1(0.3%) case among 0-9 age range, in 2(0.7%) cases among 10-19 age range, 1(0.3%) case among 30-39 range, 1(0.3%) case among 40 years and older age range. The brain involvement was seen in 2(0.7%) cases among 0-9 age range, in 1(0.3%) case among 10-19 age range, and the cardiac involvement was seen in 1(0.3%) case among 40 years and older age range. Despite the fact that the lung involvement can be seen in every age group, it is most frequently seen among 10-19 age range (%2.8) (Table 3).

Table 1. Localization of atypical cyst hydatid cases and indirect hemagglutination (IHA) test result

IHA (Indirect hemagglutination) result	Organs					Total n (%)
	Spleen n (%)	Brain n (%)	Kidney n (%)	Uterus n (%)	heart n (%)	
Positive	5(3)	2(1.2)	1(0.6)	4(2.4)	0(0)	12(7.2)
Negative	5(4)	1(0.8)	2(1.6)	4(2.4)	1(0.8)	13(9.6)
Total	10(3.5)	3(1)	3(1)	8(2.4)	1(0.3)	25(9.7)

p=3.393

Table 2. The ratio of the ones with the atypical localization among all cyst hydatid patients according to IHA (Indirect hemagglutination) results

IHA result Test result	The ones showing atypical localization, n (%)	Those who have localized in lungs, n (%)	Those who have localized in liver, n (%)	Total n (%)
Positive	12(7.2)	12(7.3)	139(85.4)	163(100)
Negative	13(9.6)	13(10.5)	99(79.8)	125(100)
Total	25(8.3)	25(8.7)	238(83)	288(100)

p=3.393

Table 3. The ratio of organ localization of cyst hydatid patients according to age groups

AGES	ORGANS							Total, n (%)
	spleen, n (%)	kidney, n (%)	uterus, n (%)	brain, n (%)	heart, n (%)	liver, n (%)	lungs, n (%)	
0-9	0(0)	1(0.3)	1(0.3)	2(0.7)	0(0)	14(4.9)	5(1.7)	23(8)
10-19	2(0.7)	2(0.7)	2(0.7)	1(0.3)	0(0)	46(16.0)	8(2.8)	61(21.2)
20-29	2(0.7)	0(0)	1(0.3)	0(0)	0(0)	42(14.6)	4(1.4)	49(17)
30-39	1(0.3)	0(0)	1(0.3)	0(0)	0(0)	31(10.8)	3(1)	36(12.5)
40 years and older	5(1.7)	0(0)	3(1)	0(0)	1(0.3)	105(36.5)	5(1.7)	119(41.3)
Total	10(3.5)	3(1)	8(2.8)	3(1)	1(0.3)	238(82.6)	25(8.7)	288(100)

p=3.393

Discussion

The cyst hydatid disease which is accepted as a frequent disease seen in Mediterranean, Middle Eastern and Asian countries, also continues to be a major health problem in our country. It is a frequent parasitosis in our country, where agriculture and animal husbandry is common and inadequate preventive medicine stands (8). People receive echinococcus eggs through water, foods and direct contact with dogs. As the eggs reaches to the stomach, they leave their larvae (hexacanth) to the digestive system. Embryos progresses through the intestinal wall and reach the liver throughout veins. If the embryos could pass the liver obstacle, they may localize in lungs. The embryos can reach the lungs with lymphatic routes bypassing the liver. If they further get able to excess through the lungs, they may localize in any kind of organ. The embryos excessed through the lungs can be seen in any other place such as the pericardium, epicardium, myocardium, fissures, pleural cavity, spleen, kidney, peritoneum, diaphragm, brain, and bones (9).

According to the resources, the localization ratios were reported as; 50%-70% in liver, 11%-17% in lungs, from 2.4% to 5.3% in soft tissues, from 0.5% to 3% in heart, 5% in pericardium, 0.5%-4.7% in muscles and subcutaneous tissue (2). The findings we have obtained as a result of the study is quite similar to these results. In our study, the liver involvement was found to be 83.0%, the cardiac involvement 0.8%, and the localization to other tissues were found to be 0.3%-3.5%.

In order to determine specific antibodies in patient sera for cystic echinococcosis IHA tests are shown as the most sensitive and specific test. It was reported that the IHA test provides sensitive results between 70-97% (10). Both

because of their ease of practice and low costs IHA tests have been preferred to be used for diagnosis (11). As a result of the study we have conducted, we see that 288 patients taken under hydatid cyst treatment, and IHA serological test result of 163 patients were found to be positive, and 125 of them were found to be negative. If it is possible to make a diagnosis throughout medical history, clinical findings, laboratory tests and radiological investigation, the surgical excision and histopathologic examinations are also necessary for a definitive diagnosis (11). Sari et al. (12) have examined metasesto-specific antibody response within eighty serum samples through ELISA, IHA and IFAT methods. Considering the cross-reactivity observed in serological tests, one (2.5%) case with taeniasis which is included within the scope of the study as control group, was determined to show cross-reaction during 1/160 serum dilutions by IHA method. Compared to the other serological tests such as ELISA and IFA, IHA method was found to be 90% much sensitive and 97.5% much more specific. Within this same study including serological examination of 80 patients, 2 vertebra, 1 muscle, 1 peritoneum, 1 brain, 1 spleen, 1 kidney and 1 muscle and 31 liver and lung localization was observed.

Meteroglu et al. (9) have been declared six cases showing atypical localization. Two of them were shown as heart echinococcosis. Hydatid cyst disease is a parasitic infection. It is known that this hydatid cyst disease, which is an endemic disease in our country, may be seen in very different anatomical regions (12).

As a result of the study we have conducted, that the rate of the patients taken under treatment in the hospital has a quite important numerical value, and those who show atypical localization are also found to be significant. In addition, considering

that the cross-reactivity of serologic tests in the diagnosis can be misleading, it was concluded that clinical and radiological findings should be exploited. In this region where animal husbandry is common and levels of socio economic development is inadequate, the public awareness should be increased and the preventive measures should be taken as it is important. For this purpose, inter-sectoral collaboration, effective methods should be developed to combat this disease.

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