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Short Communication

Hydatid Cyst Surgeries in Patients Referred to Hospitals in East Azerbaijan Province during 2009-2011

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Abstract

Background: Hydatidosis, as the most important zoonotic parasitic disease in Iran, has posed many health and economic losses. This study was conducted to investigate the demographic characteristics of hydatid cyst surgeries in hospitals of East Azerbaijan Province, Northwest of Iran.

Methods: Demographic characteristics of all patients with hydatid cyst surgery in hospitals of the province, during 2009-2011 were gathered including age, gender, occupation, number and location of the cyst, clinical symptoms, place of residence and history of contact with dog. They were extracted from reports of health center and were analyzed using STATA 11 software.

Results: Out of 52 hydatid cyst surgeries, 27 cases were females. Mean age of patients was 38.3 yr. Liver was reported as the most involved organ. The most clinical symptoms were abdominal and liver pain. Housewives comprised the most victims of the disease. Forty seven percent of patients had one cyst and 59% had the history of contact with dog. The majority of the patients were living in rural areas.

Conclusion: Due to the high costs of diagnosis and treatment of hydatidosis, collecting data on the prevalence and transmission of the disease as well as on vulnerable groups seems to be essential as the first step in controlling and preventing the disease.

Introduction

Echinococcosis or hydatidosis is a zoonotic parasitic disease in humans and animals caused by the larva stage of *Echinococcus granulosus* (1). The definitive hosts of this parasite are dogs and canine such as coyotes and wolves. Sheep, cow, camel, goat and buffalo are known as the intermediate hosts (2). Cattle, sheep and camel in Iran are the greatest and the most appropriate intermediate hosts in the life cycle of hydatid cyst disease due to the large number of fertile cysts (3, 4). Humans get infected through consuming food, water and vegetables contaminated with worm eggs (2). Humans are as the dead-end host in the life cycle of parasite (5).

This disease is endemic in rural areas of many countries, including the countries around the Mediterranean, New Zealand, Australia, Asia, America and South Africa (6, 7). In other words, the disease is more common in countries where sheep are raised (8). This disease has been reported to be endemic in various parts of Iran (9-11). Studies from different parts of Iran have reported seropositivity of 3.5-5.9% (12, 13). In a research carried out by Gharehdaghi in Tabriz using serologic assay (ELISA), the percentage of infected individuals was reported as 1.28% (14).

According to the global reports, Iran as a hyper endemic area, accounts for 1% of surgical treatment of hydatid cyst cases (9-11). In recent decades, the incidence rate of surgical cyst in Iran has increased from 5 cases per 100,000 to 27 cases per 100,000 individuals (15). The incidence rate of hydatid cyst in Iran is 1.2 per 100,000 individuals in which the most and the least cases of infection were reported from Mashhad with 44.5 per 100,000 and Hormozgan with 0.1 per 100,000 individuals, respectively (16). The prevalence of the disease among sheep in Sarab, the city of East Azerbaijan Province, has been reported as 19.1% (17).

This research was conducted to investigate the demographic characteristics of hydatid cyst surgeries in hospitals of East Azerbaijan Province and comparison with situation of the disease in other parts of Iran and world.

Materials and Methods

East Azerbaijan Province is a cold and mountainous region with area of 45491 Km² that is located in Northwest of Iran. Most people are living in urban areas. The majority of rural population is engaged in agriculture and animal husbandry so they have more contact with animals.

In this cross-sectional, retrospective study, data of hydatid cyst surgeries performed in all hospitals of East Azerbaijan Province during the 3-year period from 2009-2011 were extracted based on data recorded at Health Center. Patients' data were age, gender, place of residence (rural or urban), occupation, number and location of the cyst, clinical symptoms, and history of contact with dog.

The obtained data were encoded and recorded in the computer. Then they were analyzed using STATA 11 software for statistical descriptive parameters (mean and frequency). The relationship between gender and involved organ as well as between gender and clinical signs were analyzed using chi-square and fisher tests. *P*-value <0.05 was considered as significant. All moral considerations, including confidentiality and non-disclosure of personal information were observed.

Results

The number of hydatid cyst surgeries performed in all hospitals of East Azerbaijan Province during the 3-year study (2009-2011) was 52 cases in which 27 cases (51.9%) were females (M / F ratio = 0.92). The mean age of the patients was 38.3 years (38.3±20.8). The

infection rate in age groups is summarized in Table 1. The most involved age group was 40-60 years in which the youngest and the oldest one were 5 and 82 years old, respectively.

Sixty three percent of patients were living in rural areas, while 36.5% were living in urban areas. The most and the least affected groups were housewives (44.2%) and employees (1.9%), respectively. In other words, housewives were the main victims of the disease. The frequency of other affected groups is described in Fig. 1. Children comprised 5.4% of the patients.

The percentage of infected organs is given in Table 2 in which liver is the most affected organ (69.2%). Seventy four percent of women had liver involvement. There was no statistically significant relationship between gender and involved organ.

The involved organs had 1cyst (47%), 2 cysts (41.2%), 3 cysts (2.9%) and more than 3 cysts

(8.8%). 59.6% of patients had a history of contact with dog.

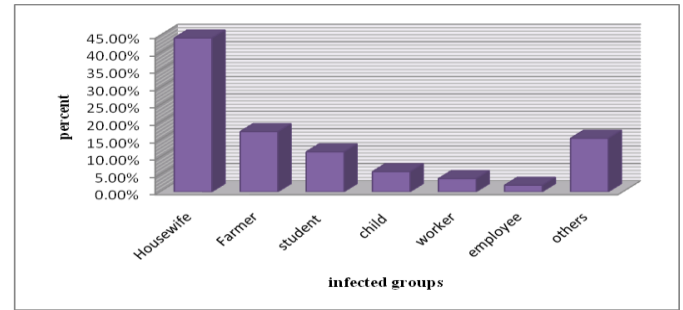


Fig. 1: Percentage of involved groups to Hydatid Cyst

The most clinical symptoms were related to abdominal pain (46.15%), liver and abdominal pain (23.08%). 41.6% of abdominal pains were observed in men. There was no statistically significant relationship between gender and clinical symptoms.

Table 1: Frequency and Percentage of infected people to hydatid cyst infection according to age group

| Age group (yr) | Frequency of infected people to cyst | Percent (%) |
|----------------|--------------------------------------|-------------|
| < 20 | 15 | 29 |
| 20-40 | 14 | 27 |
| 40-60 | 17 | 33 |
| > 60 | 6 | 11 |
| Total | 52 | 100 |

Table 2: Frequency and Percentage of infected people to hydatid cyst according to organ involvement

| Infected organs | Frequency of infected people to cyst | Percent (%) |
|--------------------|--------------------------------------|-------------|
| Liver | 36 | 69 |
| Lung | 7 | 13 |
| Liver+Lung | 3 | 6 |
| Peritoneum | 2 | 4 |
| Liver+ Kidney | 1 | 2 |
| Liver +Lung+Bone | 1 | 2 |
| Liver + Peritoneum | 1 | 2 |
| Spleen | 1 | 2 |
| Total | 52 | 100 |

Discussion

Echinococcosis or hydatid disease is a major clinical and epidemiological health problem in many countries (18). Most countries, especially countries raising livestock are endemic for the disease (6). The disease has been reported as an endemic disease in most provinces of Iran (6, 7).

In this study, the number of hydatid cyst surgeries during three-year period was 52. In terms of gender, women comprised most of the patients (M / F ratio=0.92, 51.9 vs. 48.1). The results of this study are conformed by most studies (1, 9, 10, 19-23). However, they differ from the findings of the research conducted in Italy and Turkey. The reason might be due to their job in the farm (18, 24).

The mean age of the patients was 38.3 years. The majority of patients were in the age group of 40-60 years, which it is not consistent with the results of many other studies (1, 9, 10, 18, 25-28). This could be due to lack of timely referral of patients and late diagnosis of the disease.

In the majority of investigations, liver was shown to be the most involved organ, which it is consistent with our study (1, 9, 18, 21, 22, 26-31). Since liver and lung are the main filters of body, most of the parasite larvae are present in these organs and a few of them can reach other organs. However, in a study carried out in Tunisia, the infection rate of kidney, CNS, liver and spleen were 24.1%, 32.6%, 19.6% and 11.3%, respectively which differs from the results of present study (32). In another research performed in Mauritania (33) lung was the most involved organ. Similar to the result of the study conducted in Tanzania in 2009 in which females had more hepatic hydatid cysts (47.4%), 74% of females in this study had liver involvement (30).

Sixty -nine percent of the patients had one cyst. This is consistent with the studies performed in Italy, Yemen, and cities of Iran, Tehran, Yasuj and Hamadan (1, 18, 22, 27,

28). The most of the victims were housewives (44.2%). This is confirmed by the studies performed on patients' occupation (1, 9, 10, 21, 27, 28, 31). This could be due to contact with domestic animals, feeding them, cleaning their living space, geophagy in pregnant women, getting infected with parasite egg through cleaning and eating raw vegetables.

The most prevalence of the disease was in rural areas (63.4%) which might be due to more contact with the soil, cattle and dog. These could all increase the risk of infection. Owing to lack of sufficient investigation regarding the location of patients in other studies, the current research is only compatible with the study conducted in Hamadan (27). Our results are not consistent with those of two other studies in which the number of affected patients was more in urban areas than in rural areas (1, 21).

Fifty nine percent of patients had the history of contact with dog, while in the study performed in Kashan; it was 11% (21). The majority of clinical symptoms were related to abdominal pain (46.1%) and abdominal and liver pain. This is consistent with the findings of studies carried out in Hamadan and Kashan (21, 27).

Conclusion

The present study indicates that since the majority of rural housewives is infected and is more likely to have contact with herding dogs as well as livestock, actions are necessary to be taken to control the disease. Increasing people awareness, eliminating stray dogs and treating infected herding dogs are some strategies which could lead to reduce the disease in the region.

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authors declare that there is no conflict of interest.

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