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Retrospective evaluation of hydatid cases between the years 2000-2005 detected in Sanliurfa, Turkey

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Summary

This retrospective study was carried out in order to investigate the epidemiology of cystic echinococcosis in the Sanliurfa province. Between 2000-2005, a total of 1,650,000 patients were examined and of these, 12,460 patients were hospitalised in various clinics and 88 (0.70%) underwent surgery following diagnosis. Of these 88 patients, 65 (73.86%) were female and 23 (26.13%) were male. The hydatid cysts were located as follows: 79 (89.77%) in the liver, 7 (7.95%) in the lungs and 2 (2.27%) in the spleen.

Keywords: cyst hydatid, Echinococcus, Turkey

Hydatid cysts have been known since ancient times in both animals and humans, but the parasitic nature of these „bladders" was unrecognized. Hippocrates (460-379 BC) alluded to tumors filled with water in the lungs of cattle, sheep and pigs (11). Human cystic echinococcosis (CE) is a chronic zoonotic disease that results from an infection with the larval stage of the dog tapeworm, *Echinococcus granulosus*. The disease is highly endemic in most of the countries of the Mediterranean, North Africa and the Middle East (3, 10, 13, 17). It has been reported as an important public health problem in Turkey (4, 5, 15). Furthermore, CE has been documented by veterinarians in slaughtered cattle and sheep in Turkey abattoirs (8, 12, 20). However, there is little medical awareness or information regarding the endemicity of human CE in Turkey.

CE mainly affects the liver followed by the lungs in humans; however, there is usually no direct parasitological evidence for the presence of cysts in organs or tissues (7). Patients with hepatic CE frequently exhibit no symptoms because of the slow progression of the cysts: therefore, it may only be discovered accidentally, frequently as complicated forms of the disease (7, 17). Pulmonary hydatidosis may be fortuitously revealed during thoracic radiography. Surgery, chemotherapy (or a combination of both) and the PAIR technique (puncture, aspiration, injection, reaspiration) are the main forms of treatment in human CE (9, 18, 22).

Turkey has a high prevalence of *E. granulosus* in dogs and livestock animals (8, 20), and a high incidence of CE in humans (3, 9, 10). Between 1987-1994, the Ministry of Health has recorded 21,303 hospital cases of human CE, with an annual average of 2,663 (range: 2,295-2,958). Related to a total population of approximately 61 million, the average annual incidence is 4.4 per 100,000 inhabitants (3).

Turkey and Iran are known as endemic areas of *Echinococcus multilocularis*, but only limited information is available thus far. Between 1934-1983, a total of 157 human cases of alveolar echinococcosis (AE) were diagnosed (21). Patients originated from 7 provinces in Turkey, but 86% were from eastern and central Anatolia, and only ranging from 0.7% to 5.5% from other regions, including the European Marmara province (9, 21). According to another report (15), during the period of 1979-1993 an average 7-10 new cases of AE were diagnosed per year. Although little information exists on *E. Multilocularis* infection in animal hosts in Turkey, the disease should be considered as endemic because human cases of AE have been diagnosed regularly.

The aim of the present study was to investigate the prevalence of human cystic echinococcosis in the Sanliurfa region of Turkey.

Material and methods

The study was carried out at Balikligol State Hospital in Sanliurfa, Turkey. The hospital is located in Sanliurfa, the Southeastern Anatolia region. Inpatient records were reviewed from all sites for the period of January 2000--December 2005. Records that were suspected for CE were verified through a final diagnosis, then reviewed by clinicians. Sex, date of admission, date and place of birth, cyst location, and whether the infection was new or recurrent were recorded in all CE cases. Multiple admissions for the

same patient were identified from admission dates, initials, age, sex and only the first admission of such cases was included in the analysis. Statistical analysis was performed using Minitab for Windows release 12.1 program (Friedman test). $p < 0.05$ was considered as significant.

Results and discussion

A total of 1,650,000 patient records were examined and 88 accumulated cases of human CE in hospital records during the period of January 2000 to December 2005 (tab. 1) were observed.

Twenty-three patients were male (26.13%) and 65 were female (73.86%). The ages ranged from 9-76 years with a mean age of 36.09 years (SD ± 17.47). There is a significant difference in clinical incidence of CE between male and female ($p < 0.05$) (tab. 2). There is no difference in clinical incidence of CE between sex and age groups. The hydatid cysts were located as follows: 79 (89.77%) in the liver, 7 (7.95%) in the lungs and 2 (2.28%) in the spleen. Hydatid cysts were not found located in mixed organs of the same patient (tab. 3).

Hydatid disease is caused by the larval tapeworm of the genus *Echinococcus granulosus*, *Echinococcus multilocularis* and *Echinococcus oligarthrus*. *E. granulosus* is the most common cause of hydatid disease (11, 17). The incidence of the involvement of various organs and tissues by hydatid disease is mentioned in descending order in tab. 3. The disease is prevalent in most parts of the world, especially in sheep and cattle breeding areas of Asia, North and East Africa, South America, Australia and the Middle East (3, 9, 22).

The CE incidence of Sanliurfa is high (0.70%) but this situation has not been indicated in formal records (5, 15). Several factors could account for this finding. Firstly, one of the limitations of our study is that the geographical location of residence and occupation at the time of admission were not always recorded in the files of many patients. Thus, some of the CE patients could have been treated in other hospitals in this region. Some of Sanliurfa residents have been living in the same environment where sheep and dogs live. There are approximately 200 caverns where breeders and animals live together in the vicinity of Sanliurfa. Because stray dogs have not been treated periodically against parasitic infections, it is possible that these animals play an important role in the epidemiology of echinococcosis and hydatidosis in this region. Sanliurfa is recognized to be endemic for human parasitic diseases such as ascaridiosis, leishmaniosis and amoebiosis (1, 2, 16, 19, 23). Cystic echinococcosis, however, is not currently a well-known medical condition, nor is it considered to be of public health importance. It is not a notifiable disease and there are no surveillance data available for the country. Our study was carried out to determine whether an infection with CE represents a public health threat to residents of certain areas and to identify regions with high parasite transmission. Our data clearly confirm the high endemicity of the disease in Southestern Anatolia, however it indicates that the incidence of CE was relatively high in the western city of Turkey (4).

Most hydatid cysts occur in the liver generally followed by the lungs. Involvement of the kidney, bone and brain is rare. Other organs and tissues, such as the heart, spleen, pancreas and voluntary muscle, are very rarely involved, but no site is immune (6, 17). Localisation findings of cysts are similar to preceeding reports (5, 9, 14).

The findings that both sex groups were well represented in the confirmed CE cases imply that both adults and children are susceptible to infection. Nineteen of the cases were under 20 years of age. This suggests that active transmission occurs and the disease may be

Tab. 1. Human hydatid cyst cases in hospital records during the period of 2000-2005

Year	Total cases	Hospitalized number	Hydatid cyst cases (in hospitalized cases)	
			Number	%
2000	150.000	157	2	1.27
2001	348.400	980	5	0.51
2002	359.200	2262	18	0.79
2003	364.170	2880	13	0.45
2004	369.215	5474	37	0.67
2005	59.015	707	13	1.83
Total	1.650.000	12.460	88	0.70

Tab. 2. Age and sex distribution of surgical cases with cystic echinococcosis in humans

Age (years)	Female		Male		Total	
	n	%	n	%	n	%
0-10	3	4.62	1	4.35	4	4.54
11-20	11	16.92	4	17.39	15	17.05
21-30	13	20.00	2	8.69	15	17.05
31-40	12	18.46	7	30.43	19	21.59
41-50	14	21.54	3	13.05	17	19.32
51-60	7	10.77	2	8.69	9	10.23
61-70	2	3.07	3	13.05	5	5.68
≥ 71	3	4.62	1	4.35	4	4.54
Total	65	100.00	23	100.00	88	100.00

Tab. 3. Localization of hydatid cysts (according to sex)

Location	Female		Male		Total	
	n	%	n	%	n	%
Liver	58	89.23	21	91.30	79	89.77
Lung	5	7.69	2	8.70	7	7.95
Spleen	2	3.08	–	–	2	2.28
Total	65	100.00	23	100.00	88	100.00

increased, especially in Sanliurfa and the southestern Anatolia. There is a significant difference in clinical incidence of CE between males and females ($p < 0.05$). Humans, certainly women can end up eating the eggs after close and sometimes unsanitary association with dogs. Dog care has usually been done by women in our country. In addition, feces from an infected dog could contaminate the backyard, particularly cavern environments, with tapeworm eggs. Therefore, incidence of CE may be higher in females than in males.

In conclusion, prevalence of cystic echinococcosis was found as 0.70% in the Sanliurfa region. The most localized organ was liver. This study demonstrates the potential threat to public health of CE and consideration should be given to the introduction of prevention and control measures in these regions.

References

1. *Akkafa F., Şimşek Z., Dilmeç F., Bayrak Ş.*: Sanliurfa ilinde sitma epidemiyolojisi. Turkiye Parasitol Derg. 2002, 26, 143-146.
2. *Akkafa F., Şimşek Z., Dilmeç F., Bulut K.*: Sanliurfa ilinde kutanöz Leishmaniasis epidemiyolojisi. Turkiye Parasitol Derg. 2002, 26, 34-37.
3. *Altıntas N.*: Alveolar echinococcosis in Turkey and middle-east countries. Arch. Int. Hidatid. 1997, 32, 150-154.
4. *Altıntas N.*: Past to present echinococcosis in Turkey. Acta Trop. 2003, 85, 105-112.
5. *Aslan G., Aslan B.*: Sanlıurfa bölgesinde Echinococcosis. Turkiye Parasitol. Derg. 2001, 25, 145-147.
6. *Cöl C., Cöl M., Lafcı H.*: Unusual Localizations of Hydatid Disease. Acta Med. Austrica 2003, 2, 61-64.
7. *Craig P. S., Rogan M. T., Allan J. C.*: Detection, screening and community epidemiology of taeniid cestode zoonosis: cystic echinococcosis, alveolar echinococcosis and neurocysticercosis. Adv. Parasitol. 1996, 38, 169-250.
8. *Dik B., Cantoray R., Handemir E.*: Konya et ve balik kurumu kombinasinda kesilen kücük ve büyükbas hayvanlarda hidatidozun yayilisi ve ekonomik önemi. Turkiye Parasitol Derg. 1992, 16, 91-99.
9. *Eckert J., Gemmell M. A., Meslin F.-X., Pawlowski Z. S.*: WHO/OIE Manual on Echinococcosis in Humans and Animals: a Public Health Problem of Global Concern. World Health Organization&World Organization for Animal Health, Paris 2001.
10. *Economides P., Thrasou K.*: Echinococcosis/Hydatidosis and programs for its control in the Mediterranean countries. Arch. Int. Hidatid. 1999, 33, 63-83.
11. *Grove D. I.*: A History of Human Helminthology. CAB Int. Wallingford UK 1990.
12. *Güralp N.*: Helmintoloji. Ankara Unv Vet Fak Yayin No: 368, 2. Baski, Ankara 1981.
13. *Matossian R. M., Rickard M. K., Smith J. D.*: Hydatidosis: a global problem of increasing importance. Bull. WHO. 1977, 55, 499-507.
14. *Oguzkaya F., Akcalı Y., Kahraman C., Emirogullari N., Bilgin M., Sahin S.*: Unusual located hydatid cysts: intrathoracic but extrapulmonary. Ann. Thorac. Surg. 1997, 64, 334-337.
15. *Saygı G.*: Hydatidosis in Turkey within the last fourteen years (1979-1993). Cumhuriyet Unv Yayını, Sivas 1996.
16. *Saygı G.:* Son yirmi yilda barsak parazitleri ile ilgili olarak yapilan yayinlarin irdelenmesi. Turkiye Parasitol. Derg. 1992, 16, 161-189.
17. *Thompson R. C. A., Lymbery A. J.*: Echinococcus and Hydatid Disease. CAB Int. UK 1995.
18. *Tınar R.*: Insan ve hayvan sagligi acisindan hidatidoz. Uludag Univ. Vet. Fak. Derg. 1983, 6, 85-90.
19. *Ulukanlıgil M., Aslan G., Seyrek A.*: Sanliurfa'da gecekondu bölgesindeki ilkögretim cagindaki cocuklarda intestinal helminth infeksiyonlarinin sikligi ve siddetinin arastirilmasi. Turkiye Parasitol. Derg. 2001, 25, 245-249.
20. *Umur S., Aslantas O.*: Kars belediye mezbahasinda kesilen ruminantlarda hidatidozun yayilisi ve ekonomik onemi. Turkiye Parasitol. Derg. 1993, 17, 27-34.
21. *Uysal V., Paksoy N.*: Echinococcosis multilocularis in Turkey. J. Trop. Med. Hyg. 1986, 89, 249-255.
22. *Yalcınkaya I., Er M., Ozbay B., Ugras S.*: Surgical treatment of hydatid cyst of the lung: review of 30 cases. Eur. Respir. J. 1999, 13, 441-444.
23. *Zeyrek F. Y., Özbilge H., Zeyrek C. D.*: Sanliurfa cocuk yuvası ve yetistirme yurdunda bagirsak parazitlerinin dagilimi. Turkiye Parasitol. Derg. 2003, 27, 133-135.

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