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SELVER ÖZEKİNCİ

ŞULE BAKIR

ALİ KEMAL UZUNLAR

ŞEVVAL EREN

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Pulmonary hydatid disease in southeastern Anatolia, Turkey

Selver ÖZEKİNCİ¹, Şule BAKIR², Ali Kemal UZUNLAR³, Şevval EREN⁴

Aim: To evaluate retrospectively epidemiological parameters and clinicopathologic figures of pulmonary hydatid disease in our region.

Materials and methods: A total of 117 cases of human pulmonary hydatid disease were included in this study, and these cases were diagnosed in the Department of Pathology of Dicle University Medical School, between 1987 and 2007. The patients' data were retrospectively collected from archival reports; in addition, some of the patients were still alive and contactable.

Results: Our 117 cases consisted of 66 (56.41%) females and 51 (43.58%) males. The average age was 28.18. Pulmonary hydatidosis appears to be more common in younger individuals. The prevalence is 2.6 cases/100,000. Of the total of 129 pulmonary cysts, there were 75 cysts on the right and 54 on the left side. The mean pulmonary hydatid cyst diameter in the 117 patients was 7.20 cm.

Conclusion: In our region, pulmonary hydatid disease appears to be more common in younger, female individuals, and the cysts also tend to be bigger in children than in adults.

Key words: Lung, hydatid disease

Güneydoğu Anadolu bölgesinde akciğer hidatik hastalığı

Amaç: Çalışmamız, bölgemizdeki akciğer hidatik hastalığını epidemiyolojik parametreler ve klinikopatolojik özellikler ile retrospektif olarak değerlendirmek amacıyla yapılmıştır.

Yöntem ve gereç: Çalışmaya, Dicle Üniversitesi Tıp Fakültesi Patoloji laboratuvarında 1987-2007 yılları arasında tanı alan 117 olgu dahil edildi. Hastalara ait bilgilerin çoğu arşiv raporlarından elde edildi, hastaların bir kısmı takip edilmektedir.

Bulgular: 117 olgunun 66 (% 56,41)'si kadın, 51 (% 43,58)'i erkek olup, hastalığın görülme prevalansı yüz binde 2,6 dır. Olguların çoğunluğu genç yetişkin olup, ortalama yaş 28,18'dir. Hastalardaki toplam 129 pulmoner kist odağının 75'i sağ akciğer 54'ü sol akciğer yerleşimlidir. 117 hastadaki akciğer kist hidatik odağının ortalama çapı 7,2 santimetredir.

Sonuç: Bölgemizde pulmoner hidatik hastalık gençlerde ve kadınlarda daha sık görülmektedir. Çocuklardaki kistler yetişkinlerdekine göre daha büyüktür.

Anahtar sözcükler: Pulmoner, hidatik hastalık

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¹ Department of Pathology, Faculty of Medicine, Dicle University, Diyarbakır - TURKEY

² Ministry of Health, Government Hospital, Diyarbakır - TURKEY

³ Department of Pathology, Faculty of Medicine, Düzce University, Düzce - TURKEY

⁴ Department of Thoracic Surgery, Faculty of Medicine, Dicle University, Diyarbakır- TURKEY

Correspondence: Selver ÖZEKİNCİ, Department of Pathology, Faculty of Medicine, Dicle University, Kampus 21280, Diyarbakır - TURKEY

E-mail: drselver@gmail.com

Introduction

Hydatid disease, which is caused by the tapeworm *Echinococcus granulosus* or *Echinococcus multilocularis*, is known as echinococcosis or hydatidosis. Hydatid disease is still a problem in Turkey as in many other places in the world. The vast majority of infestations in humans are caused by *E. granulosus*. *E. granulosus* causes cystic echinococcosis, the pastoral form, which has a worldwide distribution and is concentrated in sheep-raising areas. However, humans are exposed less frequently to *E. multilocularis*, which causes alveolar echinococcosis, because *E. multilocularis* infestation usually occurs in colder areas, and is associated with animals in wild ecosystems, especially foxes or dogs (1). The estimated surgical case rate of hydatid disease is 0.9-6.6 per 100,000 in Turkey (2).

In this article, our aim is to evaluate some clinicopathologic figures and epidemiological parameters of patients with pulmonary hydatid disease.

Materials and methods

A total of 117 cases of human pulmonary hydatid disease were included in this study. These cases were diagnosed as histopathologic in the Laboratory of Pathology of Dicle University Medical School between 1987 and 2007. The patients' data were retrospectively collected from archival reports; in addition, some of the patients were still alive and contactable.

While 52 patients were still alive and contactable, 31 patients had migrated to other regions or big cities in Turkey. Eight of the patients had died, and we did not have the full addresses of 26 of the patients. However, all patients had undergone surgical interventions.

It was evaluated that symptoms of the patients, such as hemithorax and lobar localizations, the number and size of cysts, and epidemiological parameters such as prevalence, age, sex, and occupation are possible risk factors in patients with hydatid disease.

Results

A total of 117 cases of pulmonary hydatid disease were documented between 1987 and 2007, representing an annual average of 5.85 cases/year. The prevalence in the southeastern Anatolia region of Turkey is 2.6 cases/100,000 (calculations are made according to the 1990, 1995, 2000 census). Our 117 cases consisted of 66 (56.41%) females and 51 (43.58%) males. The female to male sex ratio was 1.3. The average age was 28.18. The average age of men and women was 27.3 and 16.7 years, respectively; the ages of the patients collectively range from 2 to 71 years (men, 2-71 years; women, 9-70 years). Sixty-seven (57.26%) of our 117 patients were between 10 and 20 years old. A total of 97 (82.90%) patients were infected by *E. granulosus*, and the remainder (17.09%) were infected by *E. multilocularis*.

The distribution of cases according to province revealed that the majority of patients have been, or continue to be, residents of the eastern provinces of the region: Diyarbakır (n = 40, 34.18%), Mardin (n = 24, 20.51%), and Batman (n = 17, 14.52%). Data on the occupations were available for 74 pulmonary hydatid disease patients. In all, 36 (30.76%) were students, 22 (18.80%) were farmers, 10 (8.54%) were workmen, and 6 (5.12%) were unskilled workers. Of the 117 patients 104 were from rural areas, 58 had a history of dog ownership, and 35 had a domestic cat.

A majority of the patients were diagnosed accidentally on a routine chest roentgenogram required for other causes. The homogeneous density was frequently seen in pulmonary radiological pathology; also seen were the air-fluid level and solitary pulmonary nodule.

Clinical manifestations varied widely depending on the status of the hydatid cyst. Of the 117 patients, 17 (14.52%) were asymptomatic at the time of admission. The most common presenting symptom of the patients was a cough, followed by chest pains of varying severity. The remainder had purulent sputum, fever, and dyspnea; in addition to this, some patients had hemoptysis or vomiting. Twenty-seven patients (23.07%) presented with acute symptoms due to a complicated cyst: 16 had a suppurated cyst and presented with a fever and chest pains, 7 patients presented with a rupture to the bronchial tree and a

subsequent expectoration of the cyst, and 4 patients had pneumothorax and presented with acute pain and dyspnea. Twenty-seven out of the 16 patients were children. Frequently encountered symptoms are shown in Table 1.

Table 1. Clinical manifestations in the 117 patients with lung hydatid disease.

Symptoms	No. of patients	%
Cough	59	50.42
Chest pain	38	32.47
Fever	29	24.78
Sputum	22	18.80
Dyspnea	14	11.96
Hemoptysis	12	10.25
Vomiting	8	6.83
Hydatidemia	7	5.98
Pneumothorax	2	1.70

The 117 patients had 129 pulmonary cysts, because some had more than 1 cyst. Of these patients, 98 (83.76%) had pulmonary cysts, and 19 (16.23%) had a coexisting disease in the abdomen (17 in the liver and 2 in the spleen). All cysts were isolated pulmonary cysts in children (83 cases, 70.94%), and adults (34 cases, 29.05%). The number of cases of solitary pulmonary cysts was 105 (81.39%), whereas 12 cases had 2 cysts (multiple cysts). There was no sex predilection for solitary pulmonary cyst.

Of the total 129 pulmonary cysts, there were 75 cysts (58.13%) on the right and 54 (41.86%) on the left side. Nine patients had bilateral pulmonary involvement. Fifty-five cysts were found in the right lower lobe and 34 in the left lower lobe (Table 2).

The mean pulmonary hydatid cyst diameter in 117 patients was 7.20 cm. There were 29 (22.48%) hydatid cysts larger than 10 cm in diameter. Of these, 17 patients were children and 12 were adults. All of the remaining cysts were between 3 and 8 cm in diameter.

Table 2. Location of the cysts in the lungs.

Side of cysts	No. of cysts
Right Lung	
Upper lobe	13
Middle lobe	7
Lower lobe	55
Left Lung	
Upper lobe	20
Lower lobe	34

Discussion

Echinococcosis is usually seen the liver (50%-77%) and the lungs (8.5%-43%), although it may develop outside these organs (2.1%) (3,4).

There are no published data on the development of this infection in animals in Turkey. However, there are several factors that exacerbate the problem of hydatidosis in Turkey. First, the life-cycle of *E. granulosus* is predominantly dog-sheep. Once a year, especially during the Islamic festival of the Greater Bairam, any viscera and meat from sacrificed sheep or cows are dispersed into the environment, and dogs eat them (5). Second, the life-cycle of hydatidosis is predominantly sylvatic, involving domestic dogs or free-ranging dogs as definitive hosts, and various species of rodents as intermediate hosts. Humans acquire the infection from this cycle by the ingestion of the parasite eggs released from the feces of infected dogs (6,7).

This study revealed that 66 (56.41%) of patients with hydatid disease were females and 51 (43.58%) were males, where the female to male sex ratio was 1.3. In the literature, the sex ratio was calculated according to total organ involvement, but in this study only pulmonary disease was assessed and female patients comprised a majority of these cases (8,9). In our region, women are at greater risk of hydatid disease than men, due to the fact that women in rural areas of our region take part in farming and animal raising more than men. The male farmers work in the western provinces of Turkey as seasonal workers a few

months of nearly every year. As a result of this, female farmers run into the possible risk factors more than males for hydatid disease. Women have more dog contact than men because they prepare all household food.

The hydatid cysts can grow more easily and faster in the lungs because of the elastic structure of the lungs compared to the liver. For this reason, the growth rate of cysts in the lungs is estimated to be at least 5-fold higher than in the liver (10). It has been noted that the percentage of pulmonary cysts larger than 10 cm (huge cyst) is 21.9%-25% (11,12). The percentage of huge pulmonary cysts in our series was similar (22.48%). We also noted that huge pulmonary cysts occur more often in children than in adults.

Patients with multi-organ localization and multiple cysts have been reported (13). Hydatidosis with multi-organ localization, though it is seen in variable organ combinations, means predominantly the presence of cysts both in the lungs and liver. It was reported in a different series that hepatic cysts accompanying pulmonary cysts, named hepatopulmonary hydatid cysts, might be present in 6%-34.8% of patients (13-16). Isolated pulmonary cysts are more common in children than in adults (12). In this study, 19 cases (16.23%) had coexisting disease in the abdomen (17 in the liver and 2 in the spleen). Although single pulmonary cyst in adults is seen in both sexes, it is more frequent in males (53%-70%) in the second and third decades (15,17,18). Furthermore, Aribas et al. (14) reported that single pulmonary cyst is more frequent in males (53%-70%) in the second and third decades. In our study, there was no sex predilection for solitary pulmonary cyst.

Most infections are acquired during childhood and remain silent for years before the enlarging cysts cause symptoms. Intact or simple hydatid cysts of the lung have no characteristic symptoms. It has been reported that only 8%-32% of patients with pulmonary cysts are asymptomatic, whereas the symptoms, if any, are generally related to the cyst size or complication (12,15). In a report of 1055 pulmonary hydatid cysts, a cough, purulent sputum, and fever were common presenting symptoms (19). In this study, the most common clinical presentation was a cough. The term 'complicated cyst' indicates an infected cyst and the rupture of the cyst into a bronchus or the pleural cavity. On the whole, complications were observed at the rate of 22.89%-26.5% (20,21). The expectoration of the cyst can be considered as a specific feature of hydatidosis, but this sign was seen in only about 2.9% of patients (22). In this report, 5.98% of patients had expectoration of the cyst. This rate is about 2 times greater than that in the literature, partly because our patients arrived at the hospital at a late stage of the disease.

The majority of the pulmonary cysts are unilateral and solitary (13,22,23), but bilateral localization is reported in 2%-30% of cases (11,14,19,23). Aribas et al. (14) reported that pulmonary cysts were abundant in the right lung (62.5%) and the lower lobes (41% in right, and 16% in left). In this study, 7.69% of all cases had bilateral pulmonary involvement.

In conclusion, pulmonary disease appears to be more common in younger individuals and females; in addition, the cysts also tend to be bigger in children than in adults. In this geographic locale it is necessary to improve hygienic conditions, and develop screening programs to decrease the prevalence of the disease.

References

1. Morar R, Feldman C. Pulmonary echinococcosis. *Eur Respir J* 2003; 21: 1069-77.
2. Altıntaş N. Past to present: echinococcosis in Turkey. *Acta Trop* 2003; 85: 105-112
3. Tuzun M, Altınors N, Arda IS, Hekimoglu B. Cerebral hydatid disease CT and MR findings. *Clin Imaging* 2002; 26: 353-7.
4. Gashi M, Beqiri SB, Guguli M, Recica X, Ahmedi E. Our experiences in surgical treatment of thoracic echinococcosis during the period 1977-1986. *Eur J Cardiothorac Surg* 1988; 2: 425-9.
5. Altıntaş N. Cystic and alveolar echinococcosis in Turkey. *Ann Trop Med Parasitol* 1998; 92: 637-42.
6. Uzunlar AK, Yılmaz F, Bitiren M. Echinococcosis multilocularis in south-eastern Anatolia, Turkey. *East Afr Med J* 2003; 80: 395-7.

7. Martynenko VB, Shubin AG, Mordosov II, Isakov SI, Shakarov AG. Possible formation of foci of multilocular echinococcosis (alveolar hydatid disease) in the settlements of Yakutia. *Med Parazitol (Moskow)* 1984; 62: 25-7.
8. Altıntaş N, Yazar S, Yolasığmaz A, Şakru N, Gödekmerdan A, Suay A et al. Türkiye'de 1980-1998 yılları arasında saptanan alveolar echinococcosis olguları. *Türkiye Parazitoloji Dergisi* 1999; 23: 133-6.
9. Uysal V, Paksoy N. Echinococcosis multilocularis in Turkey. *J Trop Med Hyg* 1986; 89: 249-55.
10. Silm MS, Akel SR. Hydatidosis in childhood. *Prog Pediatr Surg* 1982; 15: 119-29.
11. Karaoglanoglu N, Kurkcuoglu IC, Gorguner M, Eroglu A, Turkyilmaz A. Giant hydatid lung cysts. *Eur J Cardiothorac Surg* 2001; 19: 914-7.
12. Kanat F, Turk E, Aribas OK. Comparison of pulmonary hydatid cysts in children and adults. *ANZ J Surg* 2004; 74: 885-9.
13. Petrov DB, Terzinacheva PP, Djambazov VI, Plochev MP, Goranov EP, Minchev TR et al. Surgical treatment of bilateral hydatid disease of the lung. *Eur J Cardiothorac Surg* 2001; 19: 918-23.
14. Aribas OK, Kanat F, Gormus N, Turk E. Pleural complications of hydatid disease. *J Thorac Cardiovasc Surg* 2002; 123: 492-7.
15. Burgos R, Varela A, Castedo E, Roda J, Montero CG, Serrano S et al. Pulmonary hydatidosis: surgical treatment and follow-up 240 cases. *Eur J Cardiothorac Surg* 1999; 16: 628-35.
16. Athanassiadi K, Kalavrouziotis G, Loutsidis A, Bellenis I, Exarchos N. Surgical treatment of echinococcosis by a transthoracic approach: a review of 85 cases. *Eur J Cardiothorac Surg* 1998; 14: 134-40.
17. Topcu S, Kurul IC, Tastepe I, Bozkurt D, Gülhan E, Cetin G. Surgical treatment of pulmonary hydatid cysts in children. *J Thorac Cardiovasc Surg* 2000; 120: 1097-101.
18. Todorov T, Boeva V. Echinococcosis in children and adolescents in Bulgaria: a comparative study. *Ann Trop Med Parasitol* 2000; 94: 135-44.
19. Dogan R, Yuksel M, Cetin G, Süzer K, Alp M, Kaya S et al. Surgical treatment of hydatid cysts of the lung: report on 1055 patients. *Thorax* 1989; 44: 192-9.
20. Halezaroglu S, Celik M, Uysal A, Senol C, Keleş M, Arman B. Giant hydatid cysts of the lung. *J Thorac Cardiovasc Surg* 1997; 113: 712-7.
21. Ulku R, Onen A, Onat S. Surgical treatment of pulmonary hydatid cysts in children: report of 66 cases. *Eur J Pediatr Surg* 2004; 14: 255-9.
22. Anadol D, Gocmen A, Kiper N, Ozcelik U. Hydatid disease in childhood: a retrospective analysis of 376 cases. *Pediatr Pulmonol* 1998; 26: 190-6.
23. Solak H, Ozgen G, Yuksek T, Eren N, Solak N, Kirca NK et al. Surgery in hydatid cyst of the lung-a report of 460 cases. *Scand J Thorac Cardiovasc Surg* 1988; 22: 101-4.