

## ***Patients With Cystic Echinococcosis Suspected Applicant Laboratory Between 2005-2012 Anti-Echinococcus IgG IFA Seropositivity Designated Assessment Method***

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### **Abstract**

**Background:** *Cystic Echinococcosis is a significant health problem seen in our country and region, as well.*

**Purpose:** *The purpose of the current study is to evaluate the anti-Echinococcus IgG seropositivity rates of the patients retrospectively who admitted to Dicle University, Department of Medical Microbiology Laboratory between January 2005 and June 2012 with the diagnosis of cystic echinococcosis.*

**Method:** *The serum samples of 1612 patients 901 of whom were females and 711 males, sent to variety of clinics and polyclinics with the suspicion of cystic echinococcosis were studied. Indirect fluorescent antibody method was used in determining Echinococcus IgG antibodies (IFA).*

**Results:** *The anti-Echinococcus IgG seropositivity was found to be 41.0% (662) in 1612 cases. 23.8% of seropositive patients were children and 76.1% of them were adults. Furthermore, seropositivity was detected in 43.3% of 901 females and 38.1% 711 of the males.*

**Conclusion:** *The serological test can be implemented to support the radiological diagnosis of KE, to determine asymptomatic cyst carriers, the prevalence of disease in the community and, if there is to demonstrate the effectiveness of the control program. On the other hand, echinococcosis continues to be a common public health problem in our province.*

**Keywords:** *Cystic Echinococcosis, anti-Echinococcus IgG seropositivity, rate.*

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## Introduction

Cystic Echinococcosis is a zoonotic disease which is caused by echinococcus parasites larval form in humans and animals. It is important in both health and economic aspects<sup>1,2</sup>. In intermediate hosts, parasite primarily affect liver but also affects almost any organ in the body like lung, kidney, spleen, brain, bone, heart and causes diseases<sup>3</sup>

Being one of the most important animal and human parasite in Turkey, cystic echinococcosis is seen in different geographical regions and hosts in our countries.

Eventhough imaging techniques are widely used in diagnosis of disease, in order to evaluate beter complicated cases and post operative recurrences and also for post operative follow up serological tests are essential. Among serological tests IHA, ELISA and IFA are most used ones<sup>4,5</sup>

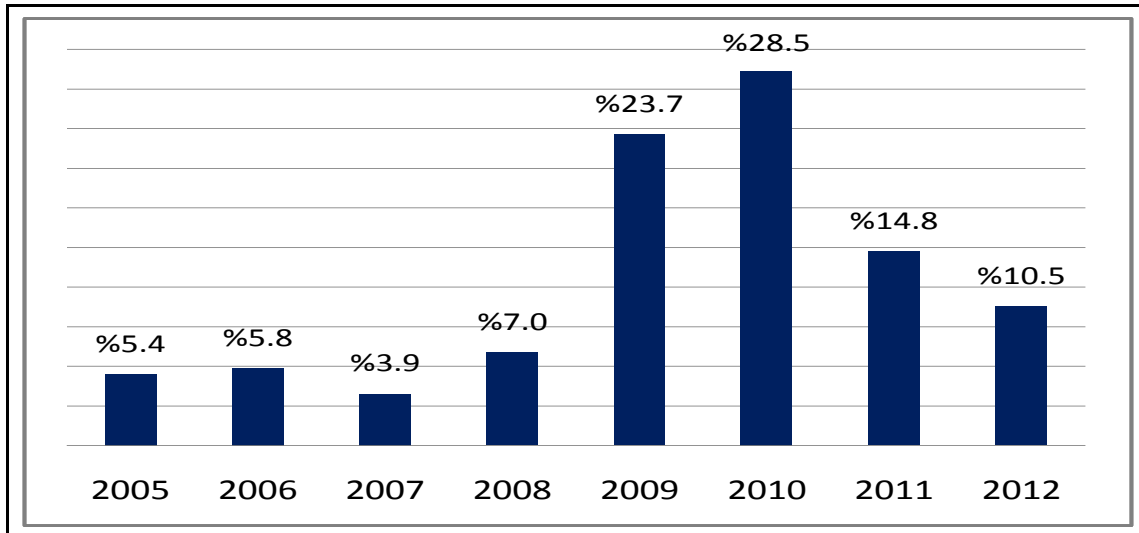
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## Materials and Methods

This study is done to evaluate anti Echinococcus IgG seropositivity ratio of patients with prediagnosis of cystic echinococcosis retrospectively in Medical Microbiology Department Laboratory Faculty of Medicine, Dicle University. IFA was used to dedect Echinococcus IgG antibodies. 1612 serum samples from 901 female, 711 male patients who are send from outpatient clinics with suspicion of cystic echinococcus were includes in this study. Frozen protoskoleks were used as antigens. According to the producer company Anti Echinococcus granulosis IIFT, Euroimmun GmbH, Germany test description 1/100 and over reactions in fluorescent microscope(Zeiss) were accepted 25 positiv

## Result

Anti Echinococcus IgG seropositivity was dedected 41% (662) of 1612 samples of this study. Among those seropositive cases 23.8% were children, 76.1% were adults. 43.3% of 901 female and 38.1% of 711 male patients were seropositive. 55.7 of seropositive patients were residing in rural area and 44.2% were in city center. Seropositivity titers of positive patients; in 46.5% were 1/100, in 31.7% were 1/320, in 21.7% were 1/1000. 55.7% of patients with cystic echinococcus were residing in rural area, 44.2% in city centers. According to years positivities were found 5.4% in 2005, 5.8% in 2006, 3.9% in 2007, 7% in 2008, 23.7% in 2009, 28.5% in 2010,14.8% in 2011, 10.5% in 2012.(first 6 month)



**Fig. 1.** Echinococcus granulosus seropositivity over eight years

**Table 1.** The prevalence of individuals according to age groups and individual CPITN scores (%)

IFA Titer	The number of patients seropositive	
	n	%
1/100	308	46.5
1/320	210	31.7
1/1000	144	21.7

**Table 2.** According to gender positivity Echinococcus granulosus

Gender	Positive		Negative	
	n	%	n	%
Woman (n=901)	391	43.3	510	56.6
Man (n=711)	271	38.1	440	61.8
Total (n=1612)	662	41.0	950	58.9

## Discussion

Cystic Echinococcosis is still a public health problem due to not having serious control programme in our country, excessive street dogs, illegal animal butchering, insufficient education of society about disease<sup>6</sup>.

Health Ministry Cystic Echinococcosis data may not show real circumstances due to defect in our country's record system. According to Health Ministry data between 1955 and 1959 years 1853 cases, between 1960 and 1964 years 2451 cases, between 1965 and 1968 years 2686 cases were detected<sup>7</sup>. Between 1975 and 1994 years case number was 40.242<sup>2</sup>. Between 2001 and 2005 totally 14789 Cystic Echinococcosis cases were detected and of these 171 (0.88%) cases has died. When cases are compared in Turkey; 1/15 850 (case/population) (6.30/100 000) was found<sup>8</sup>. According to some studies data cystic echinococcosis seropositivity ratios; 3.45% in İzmir 1, 12% in another study in İzmir 9, 14.6% in Afyon 10, 0.4% in Manisa 11, 35.5% in Ankara 12, 0.2% in Elazığ 13, 22.7% in Kayseri 14, 34.6% in Kars 15, 8.9% in Kocaeli 16.

In these studies, the used methods, and difference in study groups affect ratios. We think that, the reason we found high seropositivity (41%) anti echinococcus IgG levels is patients with prediagnosis has applied to our laboratory. In our cases radiological, surgical and pathological follow up of patients have not done and this is a restriction of our study.

According to studies generally in Turkey, disease is more common in females compared to males. Çetinkaya *et al*<sup>14</sup> found 61.5% in females and 38.5% in males in their study. Canda<sup>17</sup>, also found similar results in her study (60% in females, 40% in males).

Ertabaklar *et al*<sup>18</sup>, found 58.2% female and 41.8% male in their study; Tevfik *et al*<sup>19</sup>, in their study reported 57.7% female patients and 42.2% male patients; Delibaş *et al*<sup>9</sup>, found that 63% of cases were females and 37% were males. In our study, 43.3% of patients applying to our laboratory with suspicion of cystic echinococcosis were females and 38.1% were males, and this is comparable with other studies. All known serological methods are used in serological diagnosis of cystic echinococcus<sup>20</sup>. Specificity and sensitivity of serological methods change according to features of used antigen and the host that antigen derived from, response of patient to antibody and chosen method<sup>4</sup>.

Sarı *et al*<sup>21</sup> in a study that investigates ELISA, IFAT and IHA method's sensitivity and specificity, among 40 cystic echinococcosis cases 35 cases (87.5%) with ELISA, 33 cases (82.5%) with IFAT and 36 cases (90%) with IHA had metacestode specific antibody response. ELISA method's sensitivity was 87.5% specificity was 100%. IHA sensitivity 90% IHA specificity 97.5%, IFAT sensitivity 82.5% specificity 100%. Akpolat *et al*<sup>22</sup> found IFA test's sensitivity 91.6% and specificity 83% in their study. Even though cystic echinococcosis is tried to be diagnosed with radiological techniques, for cyst's differential diagnosis from tumor, abscess, simple cyst and other masses and also for finding asymptomatic cyst carriers, finding prevalence in the society and if exists showing effectivity of prevention programmes, we think serological tests are needed to be used.

As a result of this retrospective study, it is found that echinococcosis is a common public health problem in our city. For this reason prevention and control methods should be used seriously and as a governmental project control programme should be considered and required studies should be done top up in act as soon as possible.

## References

1. Altıntaş N, Yazar S, Yolasiğmaz A, Akısu C, Şakru N, Karacasu F, et al. A serum epidemiological study of cystic echinococcosis in Izmir and its surrounding area. *Turkey Helminthologia* 1999; 36: 19-23.
2. Özbilgin A, Kilimcioğlu AA. Kistik Echinococcosis. Özcel MA, Özbel Y, Ak M, editors. *Özcel'in Tıbbi Parazit Hastalıkları*. İzmir: Meta basım;2007. 541-66.
3. Şenlik B. Echinococcosis. Altıntaş N, Tınar R, Çoker A, Edi. *Hidatidoloji Derneği* No: 1, 2004;31-37.
4. Gottstein B. Molecular and immunological diagnosis of echinococcosis. *Clin Microbiol Rev* 1992; 5: 248-61.
5. Yazar S, Altıntaş N. Serodiagnosis of cystic echinococcosis in Turkey. *Helminthologia* 2003; 40: 9-13.
6. Yazar S. Cystic Echinococcosis in Kayseri. *Türkiye Parazitol Derg* 2002; 26: 180-2.
7. Saygı G. Hydatidosis in Turkey within the Last Fourteen Years (1979-1993). Cumhuriyet University Press, Sivas, Turkey, 1996.
8. Süleyman Yazar, Ayşegül Taylan Özkan, Murat Hökelek, Erdal Polat, Hasan Yılmaz, Özbilge H, Üstün Ş et al. Cystic Echinococcosis in Turkey between the years of 2001-2005. *Türkiye Parazitol Derg*, 2008; 32 (3): 208 - 220,
9. Delibaş SB, Ozkoç S, Sahin S, Aksoy U, Akısu C. Evaluation of patients presenting with a suspicion of cystic echinococcosis to the serology laboratory of the Parasitology Department of Dokuz Eylül University Medical Faculty]. *Türkiye Parazitol Derg*. 2006;30(4):279-81.
10. Çetinkaya Z, Ciftci IH, Demirel R, Altındış M, Ayaz E. A sero-epidemiologic study on cystic echinococcosis in Midwestern region of Turkey. *Saudi Med J* 2005; 26: 350-1.
11. Kilimcioğlu AA, Ozkol M, Bayindir P, Girginkardeşler N, Ostan I, Ok UZ. The value of ultrasonography alone in screening surveys of cystic echinococcosis in children in Turkey. *Parazitol Int* 2006; 55: 273-5.
12. Aydın M, Adıyaman G, Doğruman-Al F, Kuştimur S, Ozkan S. Determination of anti-echinococcus IgG antibodies by ELISA in patients with suspected hydatid cyst. *Türkiye Parazitol Derg*. 2012;36(2):61-4.
13. Bakal U, Kazez A, Akyol M, Kocakoc E, Simsek S. A portable ultrasound based screening study on the prevalence and risk factors of cystic echinococcosis in primary school children in East Turkey. *Acta Trop*. 2012; 123(2):91-5.
14. Cetinkaya U, Hamamcı B, Kaya M, Gücüyetmez S, Kuk S, Yazar S, Sahin I. Investigation of Anti-Echinococcus granulosus Antibodies in Patients with Suspected Cystic Echinococcosis. *Türkiye Parazitol Derg*. 2012;36(2):57-60.
15. Karaman U, Miman O, Kara M, Gıcık Y, Aycan MO, Atambay M. Hydatid cyst prevalence in the region of Kars. *Türkiye Parazitol Derg*, 2005; 29: 238-40.
16. Sönmez Tamer G. Toxoplasmosis and the incidence of Cystic Echinococcosis in Kocaeli, Turkey. *Türkiye Parazitoloji Dergisi*, 2009; 33 (2): 125 – 130.
17. Canda MŞ. Echinococcosis: Report of 47 cases and Echinococcosis diagnosis of the problem in Turkey. *Türkiye Parazitol Derg*, 1995;19: 64 -82.
18. Ertabaklar H, Pektaş B, Turgay N, Yolasiğmaz A, Dayangaç M, Özdamar A, Karaca İ, Olgaç G, Dağcı H, Göksel T, Menteş A, Çoker A, Altıntaş N, 2003. Hospital sin around and in Izmir' January 1997-May 2001 between the detected Cystic Echinococcosis Cases. *Türkiye Parazitol Derg*, 27 (2): 125-128.
19. Tefik M, Aldemir OS, Karadaş K, Çelik T, Daldal N. Unilocular cystic echinococcosis in Malatya. *Türkiye Parazitol Derg*, 2000;24 (1): 33-36.
20. Biava MF, Dao A, Fortier B. Laboratory diagnosis of cystic hydatid disease. *World J Surg*, 2001;25(1):10-4.

21. Sari C, Ertuğ S, Karadam SY, Ozgun H, Karaoğlu AO, Ertabaklar H. The comparative evaluation of Enzyme Linked Immunosorbent Assay (ELISA), Indirect Hemagglutination Test (IHA) and Indirect Fluorescent Antibody Test (IFAT) in the diagnosis of cystic echinococcosis. *Turkiye Parazitol Derg* 2009; 33: 73-6.
22. Akpolat N, Gedik Ercan. The Importance of Indirect Fluoresan Antibody Test in the Diagnosis of Cystic Echinococcosis. *Turkiye Klinikleri J Med Sci* 2009;29(6):1594-7.