Kafkas Univ Vet Fak Derg
16 (1): 81-84, 2010
DOI:10.9775/kvfd.2009.430

RESEARCH ARTICLE

Intestinal Parasites in the Students of Van Health High School and Faculty of Veterinary Medicine

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Makale Kodu (Article Code): KVFD-2009-430

Summary

This study was carried out to investigate the prevalence of intestinal parasites among the students of Van Health High School and Faculty of Veterinary Medicine. Faeces samples were collected from 40 females and 70 males, a total of 110 students. Then, the samples were examined by using the methods of saturated salt water (Fulleborn's flotation technique), native-lugol and trichrome stain. Of the 110 students surveyed for intestinal parasites, 34 (30.9%) had one or more parasites. Infection was observed in 8 female (20%), and 26 male (37.1%) students. Twelve intestinal parasite species were detected in stool specimens. The most common intestinal parasites are *Entamoeba coli* (18.18%), *Giardia intestinalis* (14.54%), *Entamoeba histolytica* (13.63%) and *Blastocystis hominis* (11.81%) in the present study. In conclusion, the Students of University of Yuzuncu Yil, Faculty of Veterinary Medicine and Van Health High School had high intestinal parasitic infection. Thus, the results suggest that both students and community must be fully aware of this public health risk.

Keywords: *Intestinal parasite, Student, Veterinary, Health High School, Occupational risk*

Sağlık Yüksekokulu ve Veteriner Fakültesi Öğrencilerinde Bağırsak Parazitleri

Özet

Bu çalışma, Yüzüncü Yıl Üniversitesi, Veteriner Fakültesi ve Van Sağlık Yüksek Okulu öğrencilerinde intestinal parazitlerin yaygınlığını araştırmak amacıyla yapıldı. 40'ı kız 70'i erkek olmak üzere toplam 110 öğrenciden gaita örnekleri alındı. Alınan gaita örnekleri fulleborn flotasyon, native-lugol ve trikrom boyama yöntemleri kullanılarak incelendi. 110 öğrenciden 34 (%30.9)'ünün bir veya birden fazla parazit ile enfekte olduğu tespit edildi. Enfeksiyon tespit edilenlerden 8 (%20)'i kız, 26 (%37.1)'sı erkek öğrenciydi. Dışkı örneklerinde toplam 12 parazit türü tespit edildi. Tespit edilen bu parazitlerden en yaygın görülenleri *Entamoeba coli* (%18.18), *Giardia intestinalis* (%14.54), *Entamoeba histolytica* (%13.63) ve *Blastocystis hominis* (%11.81)'dir. Sonuç olarak, Yüzüncü Yıl Üniversitesi, Veteriner Fakültesi ve Van Sağlık Yüksek Okulu öğrencilerinin yüksek oranda intestinal paraziter enfeksiyonlara sahip oldukları tespit edildi. Bu sebeple, hem öğrencilerin hem de toplumun bu halk sağlığı riskiyle bilinçli olmaları gerekmektedir.

Anahtar sözcükler: *Bağırsak parazitleri, Öğrenci, Veteriner, Sağlık Yüksek Okulu, Mesleki risk*

INTRODUCTION

Zoonoses are diseases that can be transmitted from wild and domestic animals to humans and are public health threats worldwide [1]. Nosocomial infections are known as a hospital-acquired infection of patients or hospital staff [2]. Zoonoses and nosocomial enteric parasites spread to man in various ways, including by the contact with infected animals, through the ingestion of contaminated food, through direct person-to-person contact; and through contact with infectious waste, usually faeces [3]. Intestinal parasites creates risks due to both above reasons and their easily contagious features that can transmit from infected man to healthy man in places where many people live together in hospital, school, student dormitory and barracks. Therefore, these parasitic infections are still serious problem in our country [4].

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Abdominal pain, nausea, vomiting, anemia, anal itching, red spots at the body surface, general itching, decrease or increase in appetite, grind of tooth in sleep, talking in sleep, flow of saliva from mouth, diarrhea or constipation, insomnia, and retardation of the development may be seen in patients with intestinal parasites. In addition, constipation or appendicitis may develop as the complications of intestinal parasites [5].

Workers of many occupation groups are exposed to a variety of work-related health risks. Zoonotic and nosocomial diseases for Veterinary Surgeons, the stuffs of health, slaughterhouse and feed are some of these health risks [3,6-9]. The studies performed have suggested that these professionals could be at greater risk than the general population for several types of specific infection [3,6]. Several studies have been carried out to examine the occupational health risks of veterinarians and health work workers such as nurse, laboratory technicians and doctor [3,6,9]. Weese [9] and Vasconcelos [10] studied the prevalence of some occupational zoonosis in veterinary students and Çulha et al.[11] studied the prevalence of intestinal parasites in students of School of Health. Published data on the occupational risks of veterinary students in Turkey was not found. Nosocomial infections are threatening patients all around the world and intestinal parasites constitute a great risk due to their easily contagious features. However, studies related to nosocomial infections concerning intestinal parasites, are inadequate in the literature [4].

Veterinary students help and assist veterinarians in many different ways in clinics and laboratory lessons, including: Holding animals to allow examination or treatment, cleaning and sterilizing examination tables and equipment, preparing animals for anesthesia and surgery, assisting veterinarians to produce diagnostic radiographs and giving medication to animals. They may also perform laboratory tests including blood, urine and faeces. In completing these and other tasks, veterinary students come into contact with animals and their excretion and zoonotic agents and it is reasonable to assume that they will be exposed to at least some of the same health hazards as veterinarians, causing similar health problems. Similar cases can be considered for medical nursery students for nosocomial disease in the hospital circumstances.

The aims of this study were to survey the prevalence of intestinal parasites in the students of University of Yuzuncu Yil, Van Health High School and Faculty of Veterinary Medicine, as they are a risk group.

MATERIAL and METHODS

Faeces samples were collected from 110 students (40 females and 70 males) of University of Yuzuncu Yil, Van Health High School and Faculty of Veterinary Medicine, Van, Turkey. Then, the samples were examined by using the methods of saturated salt water (Fulleborn's flotation technique), native-lugol and trichrome stain for the diagnosis of intestinal protozoon [12].

RESULTS

The ratios and the percentages (%) of the detected parasites according to sexuality of the examined subjects were shown in *Table 1*. Infection was observed in 8 females (20%), 26 males (37.1%), and 34 (30.9%) total examined students.

Table 1. *Distribution of parasite infections in the female and male students*

Tablo 1. *Kız ve erkek öğrencilerde parazit enfeksiyonlarının dağılımı*

Sex	Number (n, %)	Parasites detected (n, %)	Mix infection (n, %)
Female	40 (36.3)	8 (20)	6 (15)
Male	70 (63.7)	26 (37.1)	15 (21.4)
Total	110 (100)	34 (30.9)	21 (19.09)

The percentage and frequency of detected parasites are shown in *Table 2.* It was found that the four species of intestinal parasites, *Entamoeba coli, Giardia intestinalis, Entamoeba histolytica* and *Blastocystis hominis* were the most common among the examined students.

Table 2. *Percentage of distribution according to sexuality of detected parasites*

Tablo 2. *Belirlenen parazitlerin cinsiyete göre dağılımı*

Species of detected parasites	Female	Male	Frequencies	Percentage (%)
Entomoeba coli	6	14	20	18.18
Giardia intestinalis	4	12	16	14.54
Entomoeba histolytica	4	11	15	13.63
Blastocystis hominis	3	10	13	11.81
Chilomastix mesnili	1	2	3	2.72
Iodomoeba bütschlii	-	1	1	0.90
Endolimax nana	1	1	2	1.81
Trichomonas hominis	-	1	1	0.90
Enterobius vermicularis	1	-	1	0.90
Ascaris lumbricoides	1	1	2	1.81
Hymenolepis nana	1	1	2	1.81
Taenia spp.	1	2	3	2.72

DISCUSSION

Workers of many occupation group (veterinarians, laboratory personnel, animal handlers, cleaning worker, slaughterhouse personnel, kitchen staff, doctor, nurse

etc.) are at risk for an array of specific infections including zoonotic and nosocomial disease [3,6,7,9,10,13].

The incidence of intestinal parasites is closely related to such factors as age, occupation, the socio-economic level of the society, nutritional and hygienic habits, climate, environmental conditions, infrastructure and degree of education.

Prevalence of intestinal parasites in some occupational risk groups was reported in studies of various researchers. In these studies, the prevalence of intestinal parasites were 39% [14], 8.1% [15] in cleaning workers; 54.76% [7] in meat and fish establishment workers; 12.1% [16], 24.63% [17], 40.21% [13], 15% [18], 7.74% [19], 12.2% [20], 29.31% [21] in kitchen staff of hospitals; 66.66% [8], 11.6% [22], 23.78% [23] in food production workers. The percentage of intestinal parasites in the current study were lower than the percentages reported in the some researches [7,8,13,14] carried out on the various occupational workers, but higher than majority of other researches [15,16-23].

It was found that of patients admitted among 1994-1996 and 1997-2003 to parasitology laboratory of Medicine Faculty, University of Yuzuncu Yil, 20.09% and 27.6% were found to be infected with one or more intestinal parasite species, respectively [24-25]. Of students of the Mustafa Kemal University, School of Health, 45.77% were found to be infected with one or more intestinal parasite species [11]. In this study, it was observed that of the 110 students surveyed for intestinal parasites, 34 (30.9%) had one or more parasites. As indicated above, it was found that prevalence of intestinal parasites at these students was higher than results of different studies [24-25] carried out in the same region. Probable reason for this, these study groups were at high risk group. This may result in a higher prevalence in this study.

In studies on prevalence of intestinal parasites; it is reported that infected person with *E. vermicularis* [16], *B. hominis* [17], *G. intestinalis* [18], *E. vermicularis* and *G. intestinalis* [19], *E. vermicularis* [22], *B. hominis* and *E. coli* [23], *B. hominis* and *E. vermicularis* [21], *B. hominis* [11], *G. intestinalis* [26], being in a majority. In our study, *E. coli, G. intestinalis, E. histolytica* and *B. hominis* were the most frequent identified species.

Öztan et al.[4] reported that the nosocomial intestinal parasites were 33.3% in Manisa Government Hospital and of intestinal parasites within nosocomial infection make up risk with easily contagion character. In this study [4], it was reported that the probability of parasitic infections caused *G. intestinalis* and *B. hominis* to be hospital-acquired infections were high, however, whether parasitic infections caused *E. histolytica* that was hospital-acquired infection was not clear. In the present study, although *E. coli, G. intestinalis, E. histolytica* and *B. hominis* were the most common parasites, it was difficult to say whether they were hospital origin infections or not. However, it can be said that all of these students were at high risk group.

Different results in studies may associate with the socio-economic level of the society, nutritional and hygienic habits, parasite species, climate, environmental conditions and whether cellophane tape or diversified stool methods were used or not.

Housewives and nursing mothers were at significant risk of giardiasis, as were the occupational groups exposed to human wastes [27]. Schuman et al.[28] reported that surgeon infected with *G. intestinalis* cyst by respiratory tract while he operates on person infected with *G. intestinalis.* Çulha et al.[11] reported that the prevalence of *G. intestinalis* was 3.08% in School of Health Students in Hatay. In the present study, *G. intestinalis* was the second most common parasite with 16 (14.54%), in total 34 (30.9%) infected students.

It was found that 25.78% of food workers in Caroni municipality were infected by *B. hominis* of a high percentage [29]. In this study, *B. hominis* was found 11.81%.

The findings of the present study showed that the Students of Van Health High School and Faculty of Veterinary Medicine had high intestinal parasitic infection. Thus, the results suggest that both students and community must be fully aware of this public health risk. All students (veterinary and medical) should be educated on the risks of zoonotic and nosocomial infections. Nonetheless, hand-washing or the use of disposable glove should be advised in order to dramatically reduce the transmission of parasites to students. The findings of this study suggest that prevalence of other zoonotic and nosocomial parasitic infections in veterinary and medicine students need to be searched. In conclusion, students related to man and animal health should be also included in these risk groups together with workers of occupational risk groups and checking of these students for intestinal parasites on regular basis is critically important for public health.

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