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Prevalence of *Enterobious vermicularis* in Babol Medical School, 2011

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Abstract: *Enterobious vermicularis* is one of the most ubiquitous parasites of Man worldwide, being more common in the temperate regions of Western Europe and North America, but relatively rare in the tropics. This parasite has been a major public health problem in Iran. It seems to be necessary to re-evaluate data in this field and up-date it to make local health care providers aware about its status in communities. Prevalence of *E. vermicularis* in Iran was reported 25-29%. Signs of *oxyuris* contamination include stomachache, headache, perianal itching, paleness, diarrhea and abdominal cramps in companion with anorexia especially in children. This study was done as a cross sectional study in 2011, on 352 students of Babol medical school. Among them 114 (32.38%) were male and 238 (67.62%) were female. From total 352 investigated students, 76 (21.59 %) were positive and infected to pinworm including 20 (26.31%) male and 56 (73.69%) female. Parasitic diseases are a major public health problem and it is believed that education about personal hygiene, sanitation rules and parasitic diseases is important to overcome this problem. Considering data obtained from this study, since entrobiasis infection rate in Babol medical school in educated individuals was high it can be a serious problem in the whole population of society and should not be underestimated. To further limit its occurrence, public health measures and informative campaigns for the whole population and especially more for educated ones should be implemented.

Key words: *Enterobious vermicularis* · Public Health · Babol Medical School · Iran

INTRODUCTION

Parasitic diseases till now, has been accounted as one of the hygienic problems of many countries around the world. *Enterobious vermicularis*, is the most common parasite occurring in man infecting about 10% of population in developed countries [1].

Infection occurs by ingestion of eggs via contaminated hands or food. Mature threadworms are usually located in the lumen of terminal ileum or caecum. After fertilisation, the female threadworms migrate to the perianal region where air contact stimulates them to lay eggs. The presence of the female *E. vermicularis* causes intense itching at the perianal region. Scratching of the affected area will then transfer eggs to the fingers and assist in the transmission of the eggs, both back to the original host (autoinfection) and to others [2].

Extraintestinal infestations by *E. vermicularis* are rare; mostly involving the female genital tract. Comprehensive reviews by Symmers (1950) and Saffos and Rhatigan (1977) showed that these ectopic infestations were very rare. This was probably attributed to its low pathogenicity as it is primarily an intestinal parasite with a predilection for the vermiform appendix. However, infestations may still lead to distressing gynaecological symptoms such as irregular periods and urinary leakage. A few reported cases even described abdominal catastrophes such as ruptured tubo-ovarian abscess, chronic pelvic inflammatory disease or general peritonitis [2].

Prevalence of this parasite in Iran was reported as 25-29%. Signs of *oxyuris* contamination include stomachache, headache, perianal itching, paleness, diarrhea and abdominal cramps in companion with anorexia. Complications such as agitation, madness and nervousness also can be seen.

Diagnostic methods of Oxiyur includes using Graham method (Scatch test), observation of eggs in samples taken from beneath of nails and finding adult worms in feces of patients [3]. Aim of this study was to determine prevalence of Oxiyur infestation in Babol medical school students, Mazandaran province, Iran.

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MATERIALS AND METHODS

This study was done as a cross sectional study in 2011, on Babol medical university students. During the study, correct method of sampling was taught and a scotch test tape with 2 lams and a questioner requesting personal information including age, gender and location of residence were given to them. All were asked to take sample, in morning before defecation. Samples were transferred to parasitology laboratory of Babol Medical University and were observed by light microscope with magnification of 10 and 40. Collected data were analyzed by SPSS statistical software and Chi-squared test.

RESULTS

This study was done on 352 students of Babol medical school. Among them 114 (32.38%) were male and 238 (67.62%) were female. All studied students were in three age groups, 18-22, 23-25 and 26-30 years old (refer to Figure 1). Considering location of residence, 44.6% were in urban areas and 55.9% were in rural areas. From total 352 investigated students, 76 (21.59%) were positive and infected to pinworm including 20(26.31%) male and 56 (73.69%) female which was statistically significant ($p<0.05$). According to dwelling location, 34.18% of contaminated students lived in city while, 65.82% lived in rural areas, difference was statistically significant ($p<0.05$).

DISCUSSION

Enterobius vermicularis, pinworm, is one of the most common helminths worldwide, infecting nearly a billion people at all socio-economic levels. Transmission of this parasite has no environmental restrictions and the parasite can be transmitted from host to host without an obligatory stage in soil or intermediary hosts [4]. Since it has a simple transmission by contaminated hands or food, personal hygiene and sanitary rules can effectively limit its distribution. Studies on *E. vermicularis* distribution in different communities can be useful in control and protective programs. Previous years in Iran, several studies were done related to this disease. Such as, Maraghi et al in 1999 reported that in Ahwaz infection rate was 34.6% [5]. In Zahedan, Sharifi et al reported pinworm infection rate of 31.8% [6] and Maghrebi et al reported rate of 40% in Tehran [7]. Nasiri and coworkers in 2009 reported that 0.028% was the prevalence of Enterobius spp. eggs in stool exam of Karaj city inhabitants [8]. Tappeh *et al.,* showed that among mentally disabled children and adults of Urmia city prevalence of Enterobius was 3.1% [9]. Ismaeli *et al*., reported that pinworm infection rate in rural children was more than urban children, in Golestan province [10], A finding which was in common with results of present study.

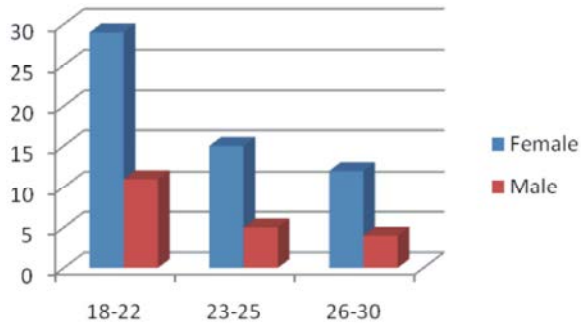

Fig. 1: Prevalence of Oxyuriasis in Babol medical school students based on gender and age

In other countries including South Korea and Argentina, pinworm infection rates of 25% [11] and 43.4% [12] were reported respectively. González-Moreno and coworkers in 2011 showed that Enterobius vermicularis was the most frequently reported helminth among outpatients with gastrointestinal symptoms in Catalonia, Spain [13]. Köksal et al in 2010 in a retrospective evaluation of the prevalence of intestinal parasites in Istanbul, Turkey, reported that *Enterobius vermicularis* was detected in 129 (9%) out of 1423 cellophane tape samples [14]. In an epidemiological study of Intestinal nematode infections in Romania by Neghina *et al*., 2010, prevalence of *Enterobius vermicularis* was reported as (42.8%) [15].

In present study oxiuriasis was observed in female more than male students ($p<0.05$). This is in line with Talari *et al*. [16]. While Lee *et al*. [11] reported that pinworms were more in boys. Pinworm prevalence was more in individuals settled in rural areas may be due to lower hygiene level and more crowded families, which are favorable conditions for incidence of this parasite.

Present study showed that surprisingly Enterobius infestation rate among medical educating students was 21.59%. This percentage of prevalence of *E. vermicularis* revealed this parasitic disease as a serious problem which should not be underestimated even in educated communities. Since extraintestinal migration of worms, although very rare, may lead to severe health disorders or even death, extra attention is needed for controlling programs. Serpytis and Seinin in 2012 reported a fatal case of *E. vermicularis* in the kidneys [17]. Arkoulis *et al*., 2012 reported that *E. vermicularis* infection of livers mimicking

malignancy, granulomas in the liver with a necrotic core [18]. In adult females Enterobius vermicularis infestation of the endometrium was a cause of menstrual irregularity and urine leakage [2].

It is believed that education about personal hygiene, sanitation rules and parasitic diseases is important to overcome this problem but it seems not enough. To further limit their occurrence, public health measures and informative campaigns for the whole population especially educated individuals should be implemented.

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