

***Enterobius vermicularis* infection among primary school children and its relationship with enuresis in Basrah marshes**

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الخلاصة

تم فحص 212 عينة (120 انثى و92 ذكر) تلاميذ مدرسة ابتدائية باستخدام طريقة الشريط اللاصق الاسكتلندي Scotch tape methods خلال المدة مابين شهر شباط الى شهر نيسان 2011 لدراسة العلاقة بين الاصابة بالدودة الدبوسية *Enterobius vermicularis* وسلس البول لدى الاطفال، تراوحت اعمارهم من 6-12 سنة في قرية تعود الى احوار البصرة. كانت نسبة الاصابة بالدودة الدبوسية *E. vermicularis* للذكور والاناث (72.82%) و (69.16%) تبعاً، في حين كانت نسبة الاصابة بسلس البول (53.73%) و (48.19%) للذكور والاناث تبعاً. احصائياً، لا يوجد فرق معنوي ($p>0.05$) بين نسبة الاصابة بالدودة الدبوسية وسلس البول للذكور والاناث. بلغت النسبة الكلية للاصابة بالدودة الدبوسية وسلس البول 150 (70.75%) و 76 (50.66%) تبعاً لكل الاطفال. احصائياً، لا يوجد فرق معنوي ($p>0.05$) بين المعدل الكلي للاصابة بالدودة الدبوسية وسلس البول.

Abstract

A total of 212 samples (120 female and 92 male) primary school children were examined by used scotch tape methods during the period from February to April 2011 to study the correlation between *Enterobius vermicularis* infection and enuresis among children, their ages were from 6-12 years in village belong to Basrah marshes. The prevalence *E. vermicularis* infection of males and females were (72.82%) and (69.16%) respectively, while the prevalence enuresis were (53.73%) and (48.19%) for males and females respectively. Statistically, there are no significant differences ($p>0.05$) between prevalence of *E. vermicularis* and enuresis infection for males and females. A total prevalence of pinworm infection and enuresis was 150 (70.75%) and 76 (50.66%) respectively for all children. Statistically, there are no significant differences ($p>0.05$) between total rate of pinworm infection and enuresis.

Key words : *Enterobius vermicularis*, Enuresis, School children, Basrah marshes

Introduction

Pinworms is one of intestinal parasites infections, white worms that live in the large intestine and can cause itching around the anal and vaginal regions especially at night and vaginal irritation, also may be causing appendicitis (1, 2). Culha& Duran demonstrated that nocturnal enuresis could be more frequent in children with *Enterobius vermicularis* disease, it was concluded that nocturnal enuresis may be related with pinworm infestation (3). Nocturnal enuresis is a common problem occurring three times more often males than females (4). Nocturnal enuresis was defined as bed-wetting in children older

than 4 years at least once a week (5; 3). There are some studies which reported the association between enuresis and *E. vermicularis* infection in Iraq and other regions (6; 7; 8 ; 3 ; 9)

Enterobiasis is less dissemination in tropical regions because the eggs of worms is frequently damaged in hot weather when compared with cool regions (10), this disease is more common in children than in adults and its particularly prevalent where several small children sleep together. *E. vermicularis* infection is prevalent in school children, kindergartens, orphanages large families (1). In

epidemiological study Al-Masudy, refer that the prevalence of Enterobiasis infection was (32%) by Vaseline-paraffin swab method in Babylon and Karbala governorates (11). This study aimed to

determined the relationship between *E. vermicularis* infection and enuresis among children for primary school in Basrah marshland village.

Materials and Methods

The present study was carried out in primary school in rural villages of Basrah marshes, Iraq in February to April 2011 to calculated the prevalence of enuresis and enterobiasis among students. A total of (212) student their age 6-12 years old, males were (92) and females (120). The questionnaire contained age, sex, education of parents, number of family

and suffering from enuresis or not. The children were examined for enterobiasis infection using the scotch tape (cellophane tape) anal swab technique. Data were analyzed statistically using Statistical Package for Social Science (12) software and correlation coefficient to find correlation relationship between *E. vermicularis* infection and enuresis.

Results

The relationship between the percent infection of enterobiasis and enuresis in males and females for different age groups were calculated, Table (1,2) and Figure (1). Microscopic cellophane tape sample examination showed that infection with enterobiasis was more in males (72.82%) than females (69.16%) of different age groups Table (1). A high percent infection of enterobiasis was (100%) for males with age 11 years and (82.14%) for females with age 6-8 years

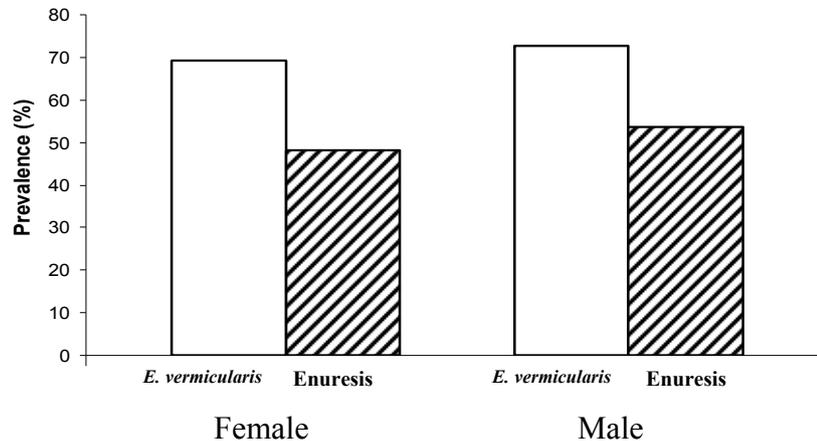
while high percent infection with enuresis (78.94%) for females and (66.66%) for males in the same age group 9 years. A positive significant correlation relationship was noted between *E. vermicularis* infection and nocturnal enuresis for males and females. Statistically, there are no significant differences ($p > 0.05$) between males and females for pinworm infection and enuresis.

Table (1): The prevalence of infection with *Enterobius vermicularis* and enuresis according age and sex

Age years	Female					Male				
	No. Exam.	No. Infe.	%	No. Infe. with enuresis	%	No. Exam.	No. Infe.	%	No. Infe. with enuresis	%
6-8	28	23	82.14	11	47.82	19	15	78.94	8	53.33
9	26	19	73.7	15	78.94	17	12	70.58	8	66.66
10	23	17	73.19	7	41.17	21	17	80.95	9	52.94
11	16	9	56.25	4	44.44	10	10	100	5	50
12	27	15	55.55	3	20	25	13	52	6	46.15
Total	120	83	69.16	40	48.19	92	67	72.82	36	53.73

Table (2): The total prevalence of infection with *Enterobius vermicularis* and enuresis for all ages

Age years	No. Exam.	No. Infe.	%	No. Infe. with enuresis	%
(6-12)	212	150	70.75	76	50.66

Figure (1): The relationship between the infection with *Enterobius vermicularis* and enuresis for both sexes

Discussion

The present study shows the total percent infection with pinworm and enuresis for both sexes was (70.75%) and (50.66%) respectively for primary school students children. *Enterobius vermicularis* infection is one of the most prevalent intestinal parasitic worms found in children (13). In an epidemiological study in Basrah marshes villages, the prevalence of infection with *Enterobius vermicularis* was (50.32 % and 44.6%) in Abu-Malah and Harer village respectively (14).

The relationship between pinworms infection and age group, the results show the high infection was (100%) in boys with age 11 years, and (82.14%) girls with age 6-8 years while the low infection was (52%) in boys and (55.55%) girls with age 12 years. This differences in prevalence may be because small children sleep together in the same bed, put their fingers in their mouths and cutting their fingers with their teeth (1, 15, 16) which led to direct contact with infection.

In Iraq, recent study have provided more information about correlation between *E. vermicularis* infection and enuresis (9) because there are limited studies about this subject (relationship between two infections) in Iraq. There are some factors play an important role in increased infection with *E. vermicularis* such as this worms has (direct life cycle) no intermediate host, bad of appetites, poor of socio-economic status and environmental factors (17 ; 18).

Results of this study demonstrated appositve significant correlation relationship was found between *E. vermicularis* infection and enuresis this result was agreement with study of Al-Esawi (9). The results of the present study demonstrated the infection with pinworms was more high in population of marshland (70.75%) when compared with previous studies (31.2%), (32%), (37.12%), (49.05%) carried out in Kirkuk, karbala, Najaf and Babylon cities (19, 11, 8, 9). The differences with prevalence of infection with *E.*

vermicularis infection in the present study and other studies due to many reasons such as environmental variation and poor life style.

There are many factors effect on nocturnal enuresis in children such as psychological and emotional disturbance (large families, divorced cases and education factors) and physiological factors (deep sleeping, reduced bladder capacity and nocturnal polyuria) (20, 21). Statistically, the relationship between *E. vermicularis* infection and sex, show no

significant differences ($p>0.05$), also there are no significant differences ($p>0.05$) according relationship between enuresis and sex.

In conclusion, *E. vermicularis* infection was more high among school children in marshland villages and this infection with pinworm has direct effect on nocturnal enuresis for children we are recommended with healthy education for children and population of marshland regions.

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