

The association of *Enterobius vermicularis* in children with pityriasis alba

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Abstract

Aim: To investigate whether there is a relationship between Pityriasis alba (PA) and *Enterobius vermicularis* (EV) presence. **Materials and Methods:** All children between the ages of 1-15 who presented to Pediatric Polyclinics for any reason within a 3-year period and had PA findings were included in the study. The symptoms of EV infestation were questioned and recorded. The presence of a macroscopic live or dead EV in the perianal region on physical examination or the appearance of an EV egg in at least one of the examinations performed 3 times with the cellophane band method were accepted as a definite case. Children in the same age group, who did not have a history or finding of PA, were taken into the control group. **Results:** Twenty-five children were identified as the case and 35 as the control group. Their ages ranged from 2 years to 15.9 years and the mean was 6.94±3.01 years. Thirty-eight (63.3%) of the cases were male and the others were female. The PA rate in boys (52.63%) was higher than in girls (22%). PA was localized in the face area, usually on the cheeks, in all cases. Anorexia and weight loss were significantly higher in those without PA ($p=0.028$). Enuresis complaints were higher in PA patients ($p=0.015$). No statistically significant difference was found between two groups for other complaints. The EV positivity rate was 20% in both the case and control groups. **Conclusion:** In this study no significant relationship was found between PA dermatosis and EV infection.

Keywords: *Enterobius vermicularis*, Pityriasis alba, Childhood.

INTRODUCTION

Pityriasis alba (PA) is a type of nonspecific dermatitis with patch-like hypopigmentation areas that can usually be seen on the face, as well as on the neck, trunk and proximal extremities [1]. The highest prevalence in both sexes is between 3 and 16 years [2]. Each of the lesions is in the form of a round, oval or irregular plaque with a thin lamellar or branched scale, which is red, pink or tan in color. Usually there are several patches, the diameter of which varies from 0.5 to 2 cm. Cases usually persist for several months and may recur. It has no apparent etiology [2].

Enterobius vermicularis (EV) (Oxyuride, Pinworm) is a small (males 3-5 mm long, females 9-12 mm long), white, thread-like parasite that typically lives in the cecum, appendix, ileum, and adjacent areas of the descending colon. It occurs in individuals

of all ages and socioeconomic levels. It is common in regions with a temperate climate [3].

It infects 30% of the world's children and humans are the only known hosts. The rate of presence in our country varies between 0.4-46% among children [4-9]. The prevalence of EV in the 1-15 years age group was reported as 3% in a study in our region [4].

Clinical manifestations are due to an allergic reaction that occurs when the parasite protrude to the anal area to lay eggs at night. It may also cause appendicitis, chronic salpingitis, pelvic inflammatory disease, peritonitis, hepatitis, and ulcerative lesions of the intestine [10-14]. Recurrent urinary tract infections have been reported due to EV [15]. Children are brought to the clinic with complaints of perianal itching, nasal itching, allergy in the body, irritability, headache and dizziness, night terrors, night

grinding, abdominal pain, diarrhea, loss of appetite, weight loss, drooling while sleeping, and enuresis nocturnal [7,9].

The definitive diagnosis is made by detecting parasite eggs or adult nematodes on 10x or 40x magnified microscopy. Female adults who go to the perianal area in the early hours of the morning lay their eggs covered with sticky secretion in the moist anal area. Diagnosis is made when the eggs are seen in the form of the letter D at stained or unpainted 10x microscopic examination of the sample taken with cellophane tape. Repeating three samples increases the chances of detecting eggs. The adult form of the parasite can also be seen alive/inanimate in the cellophane tape test. Routine stool samples rarely (0.1%) show EV eggs [16]. Mebendazole or albendazole or pyrantel pamoate, which are given one dose at intervals of 15 days, are used in the treatment. Treatment includes the whole family or other members living together. Although transmission is typically in the family, eggs have been detected even in public transportation vehicles [17].

It is recommended that children with PA question their complaints and parasite examination in terms of parasite findings such as teeth grinding at sleep, drooling while sleeping, perianal itching and abdominal pain [1]. Toychiev et al. reported that hypopigmented spots disappeared after elimination of *Hymenoleps nana*, *Giardia lamblia* and EV in patients with PA [18]. In this study, we aimed to investigate whether there is a relationship between PA and EV presence.

MATERIALS AND METHODS

Ethics committee approval was obtained from Pamukkale University Faculty of Medicine (Date: 20/7/2020, Number: 14). All children between the ages of 1-15 who presented to Pamukkale University, Faculty of Medicine, Pediatric Polyclinics for any reason within a 3-year period and had PA findings were included in the study. In addition to the identifying data of these children, the symptoms of EV infestation previously reported in the literature were questioned and recorded. The presence of a macroscopic live or dead EV in the perianal region on physical examination or the appearance of an EV egg in at least one of the examinations performed 3 times with the cellophane band method were accepted as a definite case. Additional findings in stool microscopy was also recorded in laboratory examinations.

As a control group, children in the same age group, who did not have a history or finding of PA, were taken into the control group, and after the physical examination, EV egg and fecal parasite examination were performed 3 times with cellophane band technique.

The pediatric case group with PA and the control group without PA were compared in terms of EV symptoms and laboratory positivity.

The data were analyzed with SPSS version 22 package program. Continuous variables were given as mean \pm standard deviation and categorical variables as numbers and percentages. When parametric test assumptions are satisfied,

the Significance Test of the Difference Between Two Mean in the comparison of independent group differences; When parametric test assumptions were not satisfied, the independent group used the Mann-Whitney U test to compare the differences. In addition, the relationships between the continuous variables were examined by Spearman or Pearson correlation analyzes and the differences between categorical variables were examined by Chi-square analysis. In the examination of the factors associated with the dependent variables, appropriate regression models were used.

RESULTS

Sixty-five children participated in the study. Five cases were excluded from the study because they could not have parasite examinations performed. Sixty-five % of the children lived in the city center, 13.3% in the district, 11.7% in the neighboring province, 6.7% in distant cities and 3.3% abroad. Twenty-five children were identified as the case with the presence of PA and 35 cases as the control group. Their ages ranged from 2 years to 15.9 years and the mean was 6.94 ± 3.01 years. The age distributions between those with PA and those without PA were compatible.

Thirty-eight (63.3%) of the cases were male and the others were female. The PA rate in boys (52.63%) was higher than in girls (22%) and was statistically significant (Pearson Chi-Square 0.024). No gender differences were found in terms of EV presence. No differences were found between places of residence (city center/provincial) in terms of PA presence.

PA was localized in the face area, usually on the cheeks, in all cases.

When the complaints of perianal itching, nasal itching, allergy in the body, irritability, headache and dizziness, night terrors, teeth grinding at sleep, abdominal pain, diarrhea, loss of appetite and weight loss, drooling while sleeping and enuresis nocturne were compared in the case and control group (Table 1)

When PA and Loss of appetite and weight loss were compared, anorexia and weight loss were significantly higher in those without PA ($p=0.028$). The weight, height and body mass index percentiles of patients with PA were not statistically different from the control group (P values 0.558-0.522-0.102, respectively). Compared to PA and enuresis nocturne, enuresis complaints were higher in PA patients, and it was statistically significant ($p=0.015$). In terms of other complaints questioned, no statistically significant difference was found between those with PA and those without. In the comparison of PA and EV positivity, there was no difference between the group with PA and the group without PA ($p=0.632$). With the current number of cases, our hypothesis has not been confirmed. In other words, no significant relationship was found between PA dermatosis and EV infection. The EV positivity rate was 20% in both the case and control groups.

Irritability was found to be significantly higher in EV positive cases ($p=0.05$). In addition, as a notification of the families, sleepwalking was reported in 2 PA positive cases, constipation

in 2 PA negative cases, and Terra Firma Forme Dermatitis was seen in a PA negative case.

DISCUSSION

The prevalence of EV in both the case and control groups was higher than in the prevalence study in the similar age group (3%) conducted in our region in 2009 [4]. It has been reported that there was no gender difference in EV prevalence studies conducted in those servant age groups as in our study [5,8].

In a study conducted in our country, the prevalence of PA was reported as 12% [19]. Al-Fatlawy et al. reported the prevalence of PA as 10.54% in primary school students and it was more common in boys than in girls [2]. They reported that the cases complained of EV, but did not give any numerical ratio. In our study, the fact that 8 cases were of preschool age emphasizes attention to PA at any age.

In the PA group, enuresis nocturna (EN) was significantly higher (40% vs 25%). In addition, it is higher than the rates found in the general EN prevalence studies in this age group (20.8%-18%) [20,21]. When we look at the relationship between this and the presence of EVs, the proportion of EN was calculated as 50% in those with EV and 29.7% in those who did not, but it was not found to be statistically significant.

While no correlation was found between EV and irritability in some articles [8], it was stated that there was irritability in others, but cross-references were made in most of the articles reviewed [9]. In our study, EV positivity was associated with irritability complaints.

The limitations of our study are the lower number of cases than expected due to fewer hospitalizations of children due to the Covid 19 pandemic, the difficulty of families in adapting to the parasite detection technique with cellophane tape, and the difficulties in detecting the eggs of the parasite in direct stool microscopy. In the diagnosis of EV, one sample examination gives 70%, examination of three consecutive samples gives 90%, examination of the stool sample together gives 91% chance of finding parasites, while serological tests and molecular tests do not contribute significantly to the result. This shows that laboratory-based diagnosis is not sufficient.

CONCLUSION

In this study, we could not find a significant result in terms of the association of PA and EV. There is a need for multicenter studies with more cases on the subject. The PA finding will be useful for questioning possible additional pathologies that pediatricians are familiar with.

Conflict of Interest

None declared.

Financial Support

None declared.

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