

Differences in the Prevalence of *Giardia intestinalis* as a Generalized Pruritus Etiologic Factor Between Geographic Regions in Turkey

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ABSTRACT

Objective: *Giardia intestinalis* is a protozoan parasite of the gastrointestinal tract that is widely distributed worldwide. Patients with *G. intestinalis* are usually asymptomatic; however, the presence of the parasite may lead to a variety of clinical manifestations, including skin lesions.

Methods: In this study, 100 cases of generalized pruritus who were followed up in the dermatology outpatient clinics of Kars State Hospital and Bezmalem Vakıf University between September 2013 and December 2013 were evaluated to retrospectively determine the incidence of *G. intestinalis*.

Results: A total of 100 patients were analyzed in this study, and 38% of the patients in Kars were found to have the parasite. There were no cases of *Giardia* in İstanbul. There was a statistically significant difference in parasite prevalence between geographic regions ($p < 0.05$). Overall, 37.9% of men and 38.0% of women tested positive for parasites. No significant difference was found in parasite prevalence by sex ($p > 0.05$). The mean duration of generalized pruritus was 6.52 ± 2.13 months.

Conclusions: *G. intestinalis* is more common in the Eastern Anatolian region of Turkey than in other regions. Patients with generalized pruritus should be investigated for *G. intestinalis* infection, especially in this region.

Keywords: Region, giardia, pruritus

Introduction

Generalized pruritus is one of the most common causes of dermatology outpatient visits. It can be observed in patients with a primary skin disease, underlying systemic diseases without any primary skin disease, or idiopathy. Generalized pruritus may accompany primary skin diseases such as urticaria, dermatitis herpetiformis, scabies, atopic dermatitis, and drug eruption. Diseases that most commonly accompany generalized pruritus, which is a systemic disease, are iron deficiency anemia, hepatic or cholestatic diseases, polycythemia rubra vera, diabetes mellitus, thyroid diseases, hypercalcemia, renal diseases, malignancy, allergic-infectious causes, and psychiatric diseases (1-3).

Giardia intestinalis causes 2.8 million intestinal infections per year (4). It is the most common parasitic cause of diarrhea in humans. Other than diarrhea, symptoms include abdominal pain, cramps, anorexia, vomiting, and weakness. Epidemiological and clinical studies have shown that 20%–84% of infected individuals are asymptomatic (5). Although parasitic infections often cause visible skin lesions, making a diagnosis is sometimes difficult. It has been reported that the most common skin symptoms of giardiasis are urticaria and angioedema (6, 7). Apart from these, oral ulcers, pruritus, and atopic dermatitis have been indicated to accompany giardiasis (7). In this study, we aimed to determine the frequency of *G. intestinalis* in patients with treatment-resistant generalized pruritus in two different geographical regions.

Methods

The laboratory data of 100 patients who had a complaint of pruritus and were admitted to the Dermatology Polyclinic of Kars State Hospital and Bezmalem Vakıf University between September 2013 and December 2013 were evaluated retrospectively. Fecal parasite examinations were requested from the microbiology laboratory in order to detect the etiology of generalized pruritus in patients. The patients' gaita samples were examined through the native-lugol, sedimentation method (Formol-Ethyl Acetate Sedimentation) and Trichrome staining without any delay. Written informed consent was received from the patients. Because the files were searched in the system retrospectively, no ethics committee approval was

obtained. The study was conducted in accordance with the provisions of the Helsinki Declaration.

Statistical analysis

A p value of <0.05 was accepted as statistically significant. Analyses were made with the Statistical Package for the Social Sciences 15.0 (SPSS Inc.; Chicago, IL, USA) for Windows in Istanbul, Turkey. Fisher's exact test was used to examine the relationship between the categorical variables. Numerical variables are given as the mean and standard deviation.

Results

Of the fifty patients examined in Kars, 29 were men (58%) and 21 were women (42%); 25 of the patients examined in İstanbul were men (50%) and 25 were women (50%). The ages of the patients participating in the study ranged from 8 to 65 years. The mean age was 38.56±7.65 years in Kars and 33.72±9.55 years in İstanbul. While *Giardia* was not found in patients examined in İstanbul, 19 patients (38%) examined in Kars were found to have *Giardia lamblia* cysts in their stool samples. There is a statistically significant difference between the two regions in terms of the incidence of *Giardia* ($p < 0.05$). Of the patients diagnosed with *Giardia* in Kars, eight were women (38%) and 11 were men (37.9%). There was no significant difference in the rate of incidence of parasites according to gender ($p > 0.05$). The gastrointestinal findings of the patients diagnosed with *Giardia* cysts were questioned. While at least one of the symptoms of diarrhea, abdominal pain, anorexia, and weakness was found in seven of the patients (36.8%), 12 patients (63.2%) were asymptomatic. There was no correlation between the patients' being symptomatic and the duration of generalized pruritus ($p > 0.05$).

When the duration of generalized pruritus was questioned in a hundred patients, the average was found to be 6.52±2.13 months in Kars and 4.62±1.15 months in İstanbul (3–19 months). No statistically significant relationship was found between the patients' complaints of pruritus and the detection rate of *Giardia* ($p > 0.05$) (Table 1).

Discussion

G. intestinalis (*G. duodenalis* or *G. lamblia*) is the second most common enteric infection worldwide after amoebiasis (4). Patients are usually asymptomatic, and *G.* does not cause a severe infection, which is transmitted via the fecal–oral way. Infections can be waterborne or foodborne. Young age, poor hygiene, malnutrition, hypochlorhydria, contaminated water resources, and immunodeficiencies are high risk factors for giardiasis (8).

Urticaria, angioedema, oral ulcers, pruritus, atopic dermatitis, lichen planus-like skin eruptions, mucocutaneous eruption, erythema nodosum, and granuloma are signs that are observed on the skin (7, 9, 10).

Several studies have investigated the incidence of intestinal parasites in Turkey (11–14). In the study that Karaman et al. conducted, 14.6% of patients with generalized pruritus were

Table 1. General Characteristics of Patients

	Female	Male	Total
Number of patients	21 (42%)	29 (58%)	50
Average age	34.29±12.75 years	39.84±10.43 years	38.56±7.65 years
<i>Giardia</i> cysts positivity	8 (38%)	11 (37.9%)	19 (38%)
Symptom positivity	3 (42.9%)	4 (57.1%)	7 (36.8%)
Pruritus duration	4.81±2.53 months	7.62±1.83 months	6.52±2.13 months

found to have intestinal parasites (14). According to the gender and age groups, there was no significant difference in the incidence of parasites in this study ($p > 0.05$). *G. intestinalis* was detected in 12 patients (17.6%). It is the second most common intestinal infection after *E. Coli*. *G. intestinalis* positivity was found to be significantly higher in patients with anal and generalized pruritus than those with it ($p < 0.05$).

It is known that parasitic diseases may cause eosinophilia and urticaria with increased IgE levels. *Giardia* rarely invades the intestinal wall, and it usually does not cause inflammation. *Giardia*-specific immunoreaction has shown that secretory IgA is important for eliminating parasites (15). Humoral immunity is the most important factor in the resolution of *Giardia* infestation. Similar to urticaria, cutaneous manifestations of *Giardia* invasion are considered to be associated with type 2 immune response (16, 17). In a study in Poland, the most common skin finding of giardiasis was nummular eczema (18). Hagel et al. (19) evaluated children with *Giardia* cysts and *Ascaris* eggs in their feces in terms of allergic symptoms and found that the ratio of urticaria was statistically significantly higher in patients with *Giardia* cysts than in those with *Ascaris* eggs.

Giacometti et al. (16) detected *G. intestinalis* in 4.1% of 218 patients with chronic urticaria, atopic dermatitis, and unknown itching and determined that there was a significant association between the presence of this protozoan and skin findings. Considering that the cutaneous manifestations of *Giardia* are related to type 2 immune response, the levels of interleukin (IL)-4, IL-5, IL-9, and IL-13 cytokines increase in the Th2 pathway (15, 16). These cytokines stimulate eosinophils, mast cells, and basophils. These increased cytokine levels result in allergic inflammation, elevated IgE levels, and chronic eosinophilic inflammation. In this manner, giardiasis is considered to cause generalized pruritus.

In our study, *Giardia* cysts were detected in 38% of patients with generalized pruritus in Kars but not in İstanbul. This rate is higher than those reported in previous studies. The widespread occurrence of giardiasis in the Eastern Anatolia region has been attributed to poor hygiene, increased animal husbandry in the region, and water resources that are more contaminated with animal waste than other regions. When a treatment was initiated for patients with *Giardia*, pruritus was observed to regress.

Conclusion

G. intestinalis should be considered in etiology, particularly in patients with generalized pruritus in the Eastern Anatolia. Routine examinations for parasites are required in generalized and resistant pruritus cases.

Ethics Committee Approval: Authors declared that the research was conducted according to the principles of the World Medical Association Declaration of Helsinki "Ethical Principles for Medical Research Involving Human Subjects", (amended in October 2013).

Informed Consent: Informed consent was obtained from patients who participated in this study.

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