Dermatologic Manifestations Of Giardiasis

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Giardia lamblia is the most common intestinal parasite in the United States and is worldwide in distribution.[1] Approximately 4 percent of stool specimens submitted to public health laboratories in this country contain *Giardia* cysts.[2] The usual symptoms of acute giardiasis include diarrhea, abdominal cramps, nausea, and weight loss. Many, if not most, individuals with *Giardia* infection are asymptomatic. Giardiasis can be an acute self-limiting diarrheal illness, or it can lead to chronic diarrhea and malabsorption.[3] Children are affected more often than adults, and person-to-person transmission has been documented.[4,5] There have been reports of allergic symptoms associated with giardiasis. This article describes a case of dermatitis associated with *Giardia* infection and reviews dermatologic manifestations of *Giardia lamblia* infection.

Case Report

A 48-year-old woman complained of an 8-month history of atopic dermatitis. The patient had been cared for by a dermatologist, who prescribed triamcinolone ointment 0.1 percent topically twice daily, hydroxyzine hydrochloride 25 mg four times daily, and doxepin hydrochloride 50 mg at bedtime. This treatment provided some symptomatic relief but had not cleared the markedly pruritic chronic dermatitis. There was no history of atopy, nor was there any history of dermatologic conditions. The patient requested her medications be changed because of worsening of the rash.

The patient's medical history was unremarkable except one previous hospitalization for an uncomplicated childbirth. The social history was pertinent for a move to east Tennessee 10 months earlier from her native country of Germany to live with her daughter. The dermatitis developed approximately 2 months after moving.

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The physical examination was remarkable only for an eczematous-type dermatitis with erythema, xerosis, and several fine papular and vesicular lesions on the extremities. The rash was confined primarily to the trunk and extremities and was located predominately on the flexor surfaces. This pattern was consistent with the previous diagnosis of atopic dermatitis. The involved skin was excoriated, and lichenification was present.

The patient's complete blood count, chemical analysis of serum, urinalysis, and thyroid profile were normal. The serum immunoglobin E(IgE) was 48 μg/L (20 U/mL), normal 24–240 μg/L (10–100 U/mL).

The medications were changed to fluocinonide ointment 0.05 percent twice daily and terfenadine 60 mg twice daily. This medication regimen decreased symptoms somewhat; however, the dermatitis persisted with the pruritus being especially bothersome.

Several weeks after changing medications, the patient developed the new complaint of abdominal cramping without nausea, diarrhea, or weight loss. Further questioning revealed that cramping had been an intermittent problem starting soon after coming to live with her daughter. A stool culture was negative for enteric pathogens; however, a microscopic examination showed numerous *Giardia* cysts. Treatment with metronidazole, 250 mg three times a day for 7 days, relieved the abdominal complaints. Additionally, the dermatitis completely resolved within 2 weeks. All medications were discontinued, and the rash had not recurred after 18 months of follow-up care.

The suspected source of infection was an underground well, which was the only water source for the family. The local health department believed it was impractical to filter mass quantities of water for detection of *Giardia*. The other family members were asked to have stool specimens for parasites. No members of the household were symptomatic, and they declined. The family was asked to boil water used for consumption.

Discussion

This case illustrates a possible complication of giardiasis. An extensive review of the medical literature, including foreign sources, revealed several references to dermatologic manifestations, specifically urticaria, associated with giardiasis.[6-8] Infection with *Giardia* has been associated with urticaria, pruritus, and possibly angioedema.[9,10] Other allergic manifestations, such as reactive arthritis, have also been reported.[11] *Giardia* is not usually associated with elevated IgE levels or eosinophilia.[5,12] Appropriate treatment of this parasite resulted in complete resolution of skin manifestations in all cases described. The cases described in the literature are presented in Table 1.

Additional studies not tabulated include a study in 1977 of 66 Argentinian children, aged 2 to 15 years, who came to a rheumatology clinic with joint symptoms. Goobar[11] reported that these children had joint symptoms of pain accompanied by synovitis. Sixty-four of these children had giardiasis. The 66 patients were selected because of gastrointestinal symptoms, including diarrhea, nausea or vomiting, abdominal cramps, or bloody stools. Sixty percent had what were described as allergic symptoms: nasal itching, generalized pruritus, and anal itching. Urticaria or dermatitis was not specifically reported. The report indicated that after treatment with either metronidazole or quinacrine, 90 percent of the articular and extra-articular signs and symptoms disappeared.[11]

Another specific report of note is that by Chirila, et al.,[10] who in 1981 studied 434 patients who came to the Department of Allergy at the Institute of Internal Medicine in Bucharest. Of these patients, 186 had chronic urticaria, 120 had angioedema, and 50 had both urticaria and angioedema. *Giardia* was found in 74 (40 percent) of patients with chronic urticaria, in 42 (35 percent) of patients with angioedema, and in 48 (96 percent) of patients who had both chronic urticaria and angioedema. The authors indicated clinical symptoms were rarely suggestive of giardiasis. *Giardia* was found in these allergic patients three times more frequently than the normal population of Rumania. The authors did not report dermatologic response to treatment in these patients.

There have been many cases of urticaria associated with *Giardia lamblia* infection. Previous approximations of nine total cases by Hamrick and Moore[19] in 1983 and 20 cases by Clyne and Eliopoulos[20] in 1989 were underestimations. The total number of cases reported is 33, not counting

Table 1. Literature Review of Giardiasis Associated with Urticaria or Pruritis.

Year	Cases	Ages (yr)	Other Symptoms	Treatment	Outcome
1949	1	16	Diarrhea, abdominal pain	Quinacrine	All symptoms resolved[6]
1957	2	34, 42	Diarrhea, weight loss	Quinacrine	All symptoms resolved[7]
1958	6*	NR	Gastrointestinal symptoms	Quinacrine	Urticaria resolved[8]
1969	5†	NR	NR	NR	NR[13]
1976	1	28	Diarrhea, weight loss	Metronidazole	All symptoms resolved[14]
1978	4	NR	Diarrhea	Metronidazole	All symptoms resolved[15]
1979	1	30s	None	Metronidazole	Urticaria resolved[16]
1980	3	1, 13, 35	Anorexia, diarrhea, weight loss	Metronidazole	All symptoms resolved[17]
1983	6‡	5–33	50% had gastrointestinal symptoms	Metronidazole	All symptoms resolved[18]
1983	1	4	None	Metronidazole	All symptoms resolved[19]
1983	1	6	Diarrhea, arthritis	Metronidazole	All symptoms resolved[9]
1989	1	28	Diarrhea, fever	Metronidazole	All symptoms resolved[20]
1989	1	53	Diarrhea, fever	Metronidazole	Uticaria resolved[21]
1990	1§	NR	Mild gastrointestinal symptoms	Metronidazole	All symptoms resolved[22]

NR = not reported.
*6 of 32 patients with giardiasis.
†5 of 500 patients with giardiasis.
‡6 of 50 patients with chronic urticaria.
§Self-report, allergist, pruritis only.

additional cases unreported by Kennou, et al.[17] and the Rumanian study,[10] which did not report response to treatment. Goobar[11] also did not quantitate the exact number with pruritus or the specific response to treatment in each incident.

Some of these patients had few if any gastrointestinal symptoms. This finding is not surprising in view of the known history of giardiasis.[3] The types of gastrointestinal presentations of giardiasis range from minimal or no symptoms to diarrhea and weight loss.[3] Fever is also occasionally seen.[20,23,24] The number of reports and the differences in clinical presentations, coupled with the geographic diversity, make clear that this problem is not unusual worldwide. The rather consistent response to treatment leaves little doubt there is an association between *Giardia* and urticaria, pruritus, and possibly other allergic symptoms, such as other skin rashes and synovitis.

Our patient had what appeared to be atopic dermatitis, but it occurred in an adult who had no personal or family history of atopy and who had a normal IgE level. Atopic dermatitis in association with giardiasis has not previously been described. It is, however, not unreasonable to postulate a similar pathogenesis, as this condition is clearly allergy related.

The appearance of the dermatitis after exposure to untreated well water was significant. The dermatologic response to treatment for giardiasis was dramatic and, although anecdotal, is highly suggestive of a relation between the two. It is possible this rash was secondary to another cause; however, complete resolution of this dermatitis after a single course of metronidazole and the lack of recurrence make other causes unlikely.

The immune response to *Giardia lamblia* is not completely understood. The immune system generates both a humoral and cellular response to *Giardia*.[25,26] Serum antibodies to *Giardia* of IgG and IgM classes have been found.[27-29] Secretory IgA antibodies to *Giardia* antigens have been found in breast milk.[30] Giardiasis has been associated with reduced intestinal secretory IgA, and patients with immunodeficiency syndromes have more severe gastrointestinal syndromes.[31,32]

The mechanism of urticaria associated with giardiasis has not been elucidated. Although urticaria can be caused by immunologic and nonimmunologic mechanisms, it is most likely the association with *Giardia* is immunologically based. This reaction, however, might not be a classical IgE-mediated phenomenon.[33] Although urticaria is not a usual manifestation of *Giardia*, it should be recognized, especially in view of the ubiquitous nature of the organism. Because chronic urticaria is a relatively common dermatologic disorder and results in a frequently frustrating and unfruitful evaluation, it would be reasonable to include *Giardia* in the differential diagnosis and to search for *Giardia* by either microscopic stool analysis or by the newer and perhaps more sensitive stool antigen detection method.

Detection of *Giardia lamblia* can be difficult. Microscopic identification is dependent on the skill of the examiner and appropriate sample collection and preparation. The sensitivity of microscopic stool analysis varies but is approximately 50 to 60 percent.[34,35] The sensitivity of stool antigen detection methods has been reported as 88 to 96 percent and the specificity as 95 to 100 percent.[36-38]

Summary

We have presented a case of atopic dermatitis associated with *Giardia lamblia* infection, which has not been previously described. Review of the world literature shows an association between giardiasis and urticaria. Other allergic phenomena, such as angioedema and possibly arthropathy, also might be associated with this infection. When confronted with these clinical problems, giardiasis should be included in the differential diagnosis. As these complications respond to specific therapy, identification of this organism as its cause can be particularly rewarding.

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