BRIEF ARTICLES

Clinical Characteristics of Patients Diagnosed with Strongyloidiasis in an Urban Outpatient Dermatology Department: A Case Series

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ABSTRACT

Background: Although considered a tropical disease, strongyloidiasis may be encountered in non-endemic regions, primarily amongst immigrants and travelers from endemic areas. Chronic strongyloides infection may be under-detected due to its non-specific cutaneous presentation and the low sensitivity of commonly used screening tools.

Methods: 18 consecutive patients with serologic evidence of strongyloides infestation who presented to a single urban, academic dermatology clinic between September 2013 and October 2016 were retrospectively included. Patient age, sex, country of origin, strongyloides serology titer, absolute eosinophil count, presenting cutaneous manifestations, and patient reported subjective outcome of pruritus after treatment were obtained via chart review.

Results: Of the 18 patients, all had non-specific pruritic dermatoses, 36% had documented eosinophila and none were originally from the United States. A majority reported subjective improvement in their symptoms after treatment for strongyloidiasis.

Conclusion: Serologic testing for strongyloidiasis should be considered in patients living in non-endemic regions presenting with pruritic dermatoses and with a history of exposure to an endemic area.

Key Points:

- Chronic strongyloidiasis can be encountered in non-endemic areas and clinical manifestations are variable
- Eosinophilia was not a reliable indicator of chronic infection in this case series
- Dermatologists should consider serologic testing for strongyloidiasis in patients with a history of exposure and unexplained pruritus

BACKGROUND

Strongyloides stercoralis (S. stercoralis) is a helminthic parasite that infects an estimated 30-100 million people worldwide.[1] Infection with strongyloides, or strongyloidiasis, is endemic to several regions of the world and parts of southeastern United States.[2,3] Global surveillance has found rising prevalence of strongyloidiasis in many regions of the world[2] as well as underreporting of prevalence in several countries.[4] In non-endemic regions of the world, strongyloidiasis has been described primarily in immigrants and travelers from endemic countries.[5]

The clinical and laboratory manifestations of strongyloidiasis can vary greatly amongst patients depending upon host factors and the chronicity of infection. Acute infection most commonly manifests with pulmonary or gastrointestinal symptoms, while chronic infection may produce variable cutaneous manifestations.[6,7,8] Identification and diagnosis of chronic strongyloidiasis can be challenging due to the wide range of clinical manifestations and lack of sensitivity and specificity of traditional methods of detection.

We report clinical and laboratory findings of 18 patients with serologic evidence of strongyloidiasis presenting over a 3-year period to a single urban, academic dermatology clinic in the northeastern United States.

METHODS

After institutional review board (IRB) exemption and ethical approval was granted by the Cambridge Health Alliance IRB committee, 18 consecutive patients with serologic evidence of strongyloides infestation who presented to a single urban, academic dermatology clinic between September 2013 and October 2016 were retrospectively included in this case series. All patients denied previous treatment for strongyloidiasis. Patient age, sex, country of origin, serology titer, absolute eosinophil count, and presenting cutaneous manifestations were obtained via chart review. Strongyloides antibodies were detected by enzyme-linked immunosorbent assays (ELISA) on microtitration wells sensitized with Strongyloides ratti (S. ratti) antigens. Patients were treated with ivermectin 0.2mg/kg in a single dose for 2 days after other common causes of pruritus were ruled out. None of the patients reported prior anti-helminthic therapy. At follow-up (average follow-up time 5.5 months, range 1 to 15 months), patients were evaluated for subjective change in their pruritus.

RESULTS

Among 18 patients, 8 (44.4%) were female and 10 (55.6%) were male with a mean age of 47.1 years (range 28-62). Eosinophil count was checked in 14 (77.7%) patients prior to treatment. Of these 14 patients, five (35.7%) had eosinophilia (defined as $\geq$500 eosinophils per microliter). Average strongyloides titer prior to treatment was 21.3 (range 10.1 to 60.8). Five patients had serology titers drawn after treatment with ivermectin. The average decrease in titer was 11.7 (range 5.0 - 27.7).

None of the patients in this case series were originally from the United States. Countries of origin included Brazil (10/18), El Salvador (3/18), Pakistan (1/18), Portugal (1/18),

Nepal (1/18), Haiti (1/18) and Bangladesh (1/18).

Patients presented with a variety of non-specific pruritic dermatoses and cutaneous manifestations of chronic pruritus, including lichen simplex chronicus (LSC) eczematous dermatitis, prurigo nodularis, post-inflammatory hyperpigmentation (PIH), dermatographism, lichen amyloid, and macular amyloid. No patient had evidence of the pathognomonic larva currens.

After treatment with ivermectin, 7 (38.9%) patients reported improvement of pruritus, 6 (33.3%) had complete resolution of pruritus, and 2 (11.1%) had persistent pruritus with no improvement. 3 (16.7%) patients were lost to follow-up (Table 1).

One Brazilian patient in our series was diagnosed with bullous pemphigoid by direct immunofluorescence and serology and was subsequently found to have a strongyloidiasis on serology. This patient was treated with ivermectin prior to initiating immunosuppressive therapy.

Table 1: Study population age, eosinophil count prior to treatment, cutaneous manifestations at presentation, country of origin and patient reported pruritus after treatment. X indicates data was not collected.

Age (years)	Eosinophils (cells/microL)	Cutaneous manifestations at presentation	Country of origin	Pruritus at follow-up
62	171.1	Lichen simplex chronicus	Pakistan	Lost to follow-up
55	X	Lichen simplex chronicus	El Salvador	Improved
54	1306.4	Eczematous dermatitis	Portugal	Improved
50	198	Prurigo nodulairs	Hati	Resolved
51	X	Eczematous dermatitis	Brazil	Improved
28	421.8	Pruritus, alopecia areata	Brazil	Resolved
55	X	Pruritus, no rash	Brazil	Resolved
30	962.8	Pruritus, bullae	Brazil	Persisted
49	61.8	Eczematous dermatitis	El Salvador	Lost to follow-up
54	2688.3	Eczematous dermatitis	Brazil	Improved
44	199.8	Papular dermatitis	Brazil	Resolved
52	X	Eczematous papular dermatitis	Brazil	Improved
55	1323	Post inflammatory hyperpigmentation, pruritus	Nepal	Lost to follow-up
38	136	Pruritus, dermatographism	El Salvador	Resolved
35	777	Pruritus, dermatitis	Brazil	Persisted
49	279	Pruritus, dermatographism	Bangladesh	Improved
45	79.3	Macular amyloid	Brazil	Resolved
42	172.2	Lichen amyloid	Brazil	Improved

DISCUSSION

Strongyloidiasis can reside in a host for decades without detection or treatment.[10] Although often considered a tropical disease, strongyloidiasis may be diagnosed in individuals who emigrate or travel from endemic to non-endemic areas who harbor this infection from a past exposure. In our case series, 18 patients with serologies suggestive of strongyloidiasis were identified in a single urban, academic dermatology clinic in Somerville, Massachusetts over a 3-year period. A recent study from the gastronenterology division of the same hospital identified 40 patients with strongyloidiasis over a four-year period.[11]

Physicians should be particularly diligent to consider strongyloides in patients with a history of exposure to an endemic area prior to initiating immunosuppressive therapy, as strongyloides can cause a hyperinfection syndrome with severe disseminated disease in immunocompromised patients. In our case series, one patient was diagnosed with bullous pemphigoid and strongyloides infection and therefore was treated with ivermectin prior to initiating immunosuppressive therapy.

Although the presence of eosinophilia may raise suspicion for a parasitic infestation, eosinophilia is not always present and decreases with the chronicity of the infection.[12] Prior studies demonstrate a wide range (21.1 to 82.6%) in the percentage of patients with strongyloidiasis who had eosinophilia.[10-11] In our study 34.7% had eosinophilia.

Although serial stool examination is commonly used for the diagnosis of strongyloides, this test is laborious, technically demanding, and practically burdensome to patients. It has been shown that a single stool examination fails to detect larvae in up to 70% of cases, and 3 stool examinations only increases sensitivity to 50%.[9] Serologic studies for strongyloides infestation are a clinically useful alternative. The serologic test used in our institution has a sensitivity of 88% and specificity of 94% and has a raw cost equivalent to a single stool examination ($6.00USD). Additionally, there is typically a significant drop in titer by 6 months after parasite eradication and thus serology can be used as a “test of cure”. In our case series, the average drop in titer was 11.7 (range 5.0-27.7).

Serologic studies for strongyloides are limited by cross reactivity to other parasitic infections and an inability to distinguish between past and current infections. Although causality between patients’ serologies for strongyloides and their cutaneous manifestations cannot be definitively linked, the anecdotal resolution of pruritus in several patients who had reported years of symptoms suggests that in at least some patients their pruritus may have correlated with chronic infestation.

CONCLUSION

Although considered a tropical disease, strongyloidiasis may be encountered in non-endemic regions among patients who have travelled or emigrated from endemic areas. This infection may be under-detected due to its non-specific cutaneous presentation and low sensitivity of commonly used screening tools. We hope dermatologists will consider serologic testing for strongyloides in patients

from endemic regions with unexplained pruritus.

Conflict of Interest Disclosures: none.

Funding: none.

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