Journal of Community Hospital Internal Medicine Perspectives

co-action PUBLISHING

CASE REPORT

Strongyloidiasis in the immunocompetent: an overlooked infection

Niranjan Tachamo, MD*, Salik Nazir, MD, Saroj Lohani, MD and Paras Karmacharya, MD

Department of Medicine, Reading Health System, West Reading, PA, USA

Strongyloidiasis is a parasitic infestation caused by *Strongyloides stercoralis*. Most cases are asymptomatic; however, symptomatic patients may present with a wide range of non-specific cutaneous, pulmonary, or gastrointestinal symptoms posing a diagnostic dilemma and delay in diagnosis. We report a case of a 58-year-old female who presented with months of generalized pruritus and abdominal discomfort along with persistent eosinophilia due to strongyloidiasis, which completely resolved with treatment.

Keywords: *Eosinophilia*; *Immunocompetent*; *Parasitic infection*; *Strongyloides stercoralis*; *Strongyloidiaisis*

*Correspondence to: Niranjan Tachamo, Department of Medicine, Reading Health System, Sixth Avenue and Spruce Street, West Reading, PA 19611, USA, Email: niranjantachamo@gmail.com

Received: 23 April 2016; Revised: 12 July 2016; Accepted: 15 July 2016; Published: 7 September 2016

A 58-year-old Hispanic female presented with complaints of generalized pruritus and abdominal discomfort for the past 4–5 months. She moved to the United States from Puerto Rico 32 years back, and her last visit to her country was 5 years before. She denied rashes, joint pains, fever, chills, weight loss, or change in bowel movements. There was no history of trauma, new medications, or recent travel. She was not immunocompromised, and there was no history of autoimmune diseases. Her generalized pruritus persisted despite avoiding any skin products and despite empiric treatment with antihistamines and antifungal shampoos.

She was afebrile and hemodynamically stable. No skin rash, dry skin, hair changes, or lymphadenopathy was noted. There was no excoriation or burrows suggestive of scabies. Physical examination was otherwise unremarkable.

Pertinent labs included white cell count of 8.8/μL (4,800–10,800/μL) with 18.6% eosinophils (0–6%). Hemoglobin was 13.2 g/dL (12–16 g/dL) with platelet count of 419,000/μL (130,000–400,000/μL). CRP was 1.05 mg/dL (0–0.7 mg/dL), but erythrocyte sedimentation rate was 10 mm/h (0–20 mm/h). Her renal function, liver function, and thyroid-stimulating hormone tests were within normal limits. Review of her previous records revealed that eosinophilia was present for the past 7 years suggesting a possibility of chronic parasitic infections, especially with her travel history. *Strongyloides* IgG antibody was high at 2.43 IV ($\leq$1.49 IV) suggesting *Strongyloides* infection.

She was treated with ivermectin (200 μg/kg) for two consecutive days. On subsequent follow-up visit, her pruritus and abdominal discomfort had resolved along with the resolution of peripheral eosinophilia (eosinophil counts dropped from 18.7 to 1.7%). Follow-up serum IgG for *Strongyloides* was negative, as were stool tests for ova and parasites.

Discussion

Strongyloidiasis is a parasitic infestation caused by *Strongyloides stercoralis*. It affects more than 100 million people worldwide (1). Latin America is presumed to have high endemicity for strongyloidiasis; however, the prevalence is low in Puerto Rico, exceeding 2% in only one study (2). Travelers, immigrants, and military veterans are reported to have the highest infection rates in the first world countries (3). Infection starts when the filariform larvae from the contaminated soil penetrate the human skin and mucosa. They then migrate into the alveolar air sacs, ascend to the upper airway, and are swallowed. These larvae mature into adult worms, burrow into the intestinal mucosa and produce eggs, and develop into filariform larvae, which penetrate the intestinal mucosa and perianal skin to perpetuate the auto-infective cycle (3–5).

Strongyloidiasis is clinically significant because infection can persist for many years in the untreated host through the autoinfection cycle, usually as an undetected, asymptomatic condition (1, 4). If symptomatic, symptoms may be non-specific and highly variable. Infected individuals may present with waxing and waning cutaneous,

Citation: Journal of Community Hospital Internal Medicine Perspectives 2016, **6**: 32038 - http://dx.doi.org/10.3402/jchimp.v6.32038

pulmonary, and gastrointestinal symptoms (6). The most common cutaneous symptoms are urticaria, localized or generalized pruritus, prurigo, maculopapular exanthema, or pathognomic larva currens (6). Larva currens is an allergic reaction to the migration of filariform larvae in the skin at a relatively fast rate leaving behind itchy urticarial tortuous tracks (4–6). Our patient presented with generalized pruritus. Migration of larvae into lungs may present with cough, shortness of breath, wheezing, and pulmonary infiltrates, similar to Loffler's syndrome. Migration of larvae into gastrointestinal tract may present with indigestion, crampy abdominal pain, diarrhea, malabsorption, or weight loss. Our patient had abdominal pain and discomfort along with the generalized pruritus. The most serious manifestation is hyperinfection syndrome due to accelerated endogenous autoinfection cycle, which has high morbidity and mortality in immunocompromised individuals (3, 4, 6). Hence, strongyloidiasis should be ruled out before starting an immunosuppressive treatment in any patient with unexplained eosinophilia, non-specific symptoms, or a history of travel to endemic areas (3).

Reactive causes of eosinophilia should first be ruled out in patient with persistent eosinophilia. While allergic reactions remain the most common cause in developed countries (almost 80%), parasitic infections should be included in the differential diagnosis in the right clinical setting (travel history, immigrants). The common causative organisms are *S. stercoralis* (most common), *Toxocara canis*, and *Schistosomia haematobium* (7). Diagnosis of strongyloidiasis can be made by serial stool examination for detection of ova and parasite or serology (3–5). Stool test has a high sensitivity in acute and disseminated strongyloidiasis, whereas serology has a high sensitivity and specificity for chronic strongyloidiasis in immunocompetent patients. Our patient had positive serology, thus suggesting chronic strongyloidiasis. Strongyloides-specific IgG antibodies measure body's immune response to the presence of *S. stercoralis*. IgG levels decrease with effective treatment, and hence, it is a useful test for monitoring eradication of the disease as was seen in our patient (5).

Treatment options include ivermectin and benzimidazoles (albendazole and thiabendazole) (5). Ivermectin is the most effective available therapy for the eradication of *S. stercoralis*. Albendazole has a lower cure rate, while thiabendazole is less preferred due to its adverse effects such as dizziness, nausea, vomiting, disorientation, headache, and hypersensitivity reactions (5, 8). The effectiveness of treatment can be assessed by repeating stool tests or serology following completion of the treatment. A negative test result after approximately 6 months indicates successful therapy (5).

Teaching points

1. Strongyloidiasis should be suspected with persistent eosinophilia and non-specific symptoms like pruritus and abdominal discomfort in immunocompetent patients.
2. All infected patients should be treated even if they are asymptomatic.

Acknowledgements

None

Conflict of interest and funding

The authors have not received any funding or benefits from industry or elsewhere to conduct this study.

References

1. Toledo R, Muñoz-Antoli C, Esteban J-G. Strongyloidiasis with emphasis on human infections and its different clinical forms. Adv Parasitol 2015; 88: 165–241. doi: http://dx.doi.org/10.1016/bs.apar.2015.02.005
2. Buonfrate D, Mena MA, Angheben A, Requena-Mendez A, Muñoz J, Gobbi F, et al. Prevalence of strongyloidiasis in Latin America: A systematic review of the literature. Epidemiol Infect 2015; 143(3): 452–60. doi: http://dx.doi.org/10.1017/S0950268814001563
3. Funkhouser TA, Carr WW. A 34-year-old man with chronic itching and peripheral and submucosal eosinophilia. Allergy Asthma Proc. 2006; 27(1): 77–81.
4. Mahmoud AA. Strongyloidiasis. Clin Infect Dis 1996; 23(5): 949–52; quiz 953.
5. Page W, Speare R. Chronic strongyloidiasis – Don't look and you won't find. Aust Fam Physician. 2016; 45(1): 40–4.
6. Károlyi Z, Erös N, Kriston R. Cutaneous manifestations of strongyloidosis. Orv Hetil. 1999; 140(4): 191–4.
7. Karmacharya P, Donato AA, Aryal MR, Pathak R, Goonewardene M, Valent P. All systems red. Am J Hematol. 2015; 90(4): 356–60. doi: http://dx.doi.org/10.1002/ajh.23869
8. Henriquez-Camacho C, Gotuzzo E, Echevarria J, White AC, Terashima A, Samalvides F, et al. Ivermectin versus albendazole or thiabendazole for *Strongyloides stercoralis* infection. Cochrane Database Syst Rev 2016; 1: CD007745. doi: http://dx.doi.org/10.1002/14651858.CD007745.pub3