

Case Report

A rare case of disseminated strongyloidiasis

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Abstract:

Strongyloid stercoralis infection affects hundreds of millions of people world wide, although no precise estimate is available. Although most infected individuals are asymptomatic, it is capable of transforming into a fulminant fatal illness under certain conditions associated with compromise of host immunity. A case of 36 years old immune compromised male with erythematous skin lesions who developed disseminated strongyloidiasis after treatment with steroids. The patient was treated with Ivermectin 200mcg /Kg daily. Patient expired with fatal illness in spite of treatment. Conclusion: Proper screening is mandatory in high risk patients and awareness regarding disseminated form of strongyloidiasis for clinicians. Ivermectin is the gold standard treatment.

Key words: Strongyloidiasis, Ivermectin, Immunocompromised.

Introduction:

Strongyloid stercoralis infection affects hundreds of millions of people world wide, although no precise estimate is available [1]. Although most infected individuals are asymptomatic, it is capable of transforming into a fulminant fatal illness under certain conditions associated with compromise of host immunity [2]. Strongyloidiasis is a neglected condition caused by Strongyloidis stercoralis, a soil transmitted helminth mainly distributed in tropical and subtropical regions, but also present in small areas of low endemicity in temperate climate [3].

The life cycle of S. stercoralis in human begins when free living infective filariform larvae penetrate the skin and migrate hematogenously to the lungs [4]. Once the larvae reaches the lung capillary beds they migrate through the capillary walls into the alveolar air spaces. The larvae are coughed into larynx where

they are swallowed and thus gain access to the duodenum and jejunum. The larvae develop in to adult females which lay eggs that hatch non – migratory (rhabditiform) larvae that penetrate the mucosa, leading to internal auto- infection.

This auto infective cycle may persist and disseminate due to immune compromised states like HTLV-I, infection, chemotherapy or corticosteroid therapy [5-7]. Immune suppressed individuals may tend to develop hyperinfection syndrome and disseminated strongyloidiasis those are potentially fatal [8].

Clinical syndrome of strongyloidiasis encompasses a spectrum of acute strongyloidiasis, chronic strongyloidiasis, hyperinfection and disseminated infection. The term disseminated infection is often used to refer migration of larvae beyond the range of the pulmonary auto infective cycle.

This symptoms include gastrointestinal manifestations (like pain, watery diarrhea, anorexia, weight loss and gastrointestinal bleed), cardio respiratory manifestation (like breathlessness, wheezing , palpitation, atrial fibrillation, hemoptysis, pluritic chest pain), dermatological manifestations like pruritic linear streaks, petechial pruritic rashes and vasculitis, DIC. Central nervous system manifestations include meningitis and vasculitis [9].

Corticosteroids are widely used in the management of many skin diseases and connective tissue disorders and disseminated strongyloidiasis is reported after corticosteroid administration in this patient. Dissemination may involve gastrointestinal system, lungs and cerebrospinal fluids [10,11].

Given the increasing number of immune compromised individuals through out the world, better approach to identifying, screening and treating those at risk will likely decrease the morbidity and mortality associated with *S. stercoralis* infection.

Case report:

A 36 year old male patient presented with intermittent semisolid stools with blood and mucus since three months, cough and expectoration since two months and altered level of consciousness with weakness of right upper and lower limb since three days. Past history of erythematous raised skin lesions all over the body for which he used oral and topical steroids for one year. On physical examination, patient was anemic with dry scaly erythematous skin lesions all over the body, Onychomycosis of fingers and toes, edema of both lower limbs upto thighs. Patient was afebrile, pulse rate 108/mt, blood pressure is low, cardiovascular system is normal, respiratory system examination reveals bilateral crepitations in basal areas. Abdominal examination revealed minimal

splenomegaly. Central nervous system examination shows right sided classical hemiplegia.

Laboratory findings documented low haemoglobin, leucocytosis (14,600/cells), with differential count of N40, L38, E19, M3 with ESR of 34mm at the end of 1 hr. serum total protein is 3.9gm/dl with albumin 2.2gm/dl. RBS, LFT, RFT were normal. Seronegative for HIV, HBsAg and HCV. Stool examination shows plenty of larvae of *Strongyloid stercoralis*. Chest X-ray show nodular lesion in the right lower zone. CT Brain shows acute massive infarct involving both ACA and MCA territory on left side. Patient was treated with anti edema measures, antibiotics and antiparasitic measures with Ivermectine and supportive measures with nutritional supplementation were given during the hospital stay. Patient condition was deteriorated during the course of hospital stay and expired.

Discussion:

Typically hyperinfection syndrome occur in patients with immunosuppressive states. The diagnosis of such patients may at time be difficult because of lower incidence of eosinophilia [12]. Single stool examination is said to be about 50% sensitive for making the diagnosis of strongyloidiasis infection among symptomatic chronic disease [13]. In this patient 100% stool samples were positive prior to therapy and during treatment with Albendazole and Ivermectine. Serological testing now widely available and is sensitive although not specific. Infection with filariae or ascariasis can lead to false-positive [13]. Serological test was not done in our patient.

This case is rare because disseminated disease occurred after the initiation of corticosteroid therapy with involving every system. Corticosteroid has an effect on immune system that controls many of helminthic infections, the so called Th2 response.

This represents a complex interaction of antibody, particularly IgE, IgG, T-cell derived cytokines, peripheral and tissue eosinophils. Steroids acutely suppress the eosinophil and T-cell activation [14]. Our case shows typical manifestations of disseminated strongyloidiasis infection involving gastrointestinal, respiratory, dermatological and neurological manifestations. Patient died in spite of treatment with Ivermectine. Ivermectine is currently the gold standard for treatment of strongyloidiasis and is in the WHO model list of essential medicines [15]. The fatality rate of disseminated disease of strongyloidiasis infection is very high [16]. Clinicians must be well aware of the possibility of hyperinfection and dissemination of strongyloidiasis. 13-78.

Test Name	Patient's Value	Reference Value
STOOL FOR MICROSCOPY		
PHYSICAL EXAMINATION:		
Colour	:: Yellowish	
Consistency	:: Formed	
Adult Parasitic Segments	:: Absent	
Mucous	:: Absent	
Frank Blood	:: Absent	
MICROSCOPIC EXAMINATION:		
Few Larva of Strongyloides Stercoralis (Rhabditiform Larva) seen on wet mount examination. Few pus cells and fat Globules seen.		

Figure 1: Laboratory report confirming presence of Strongyloides



Figure 2: Nails showing onychomycosis



Figure 3: Foot showing presence of fungal infections

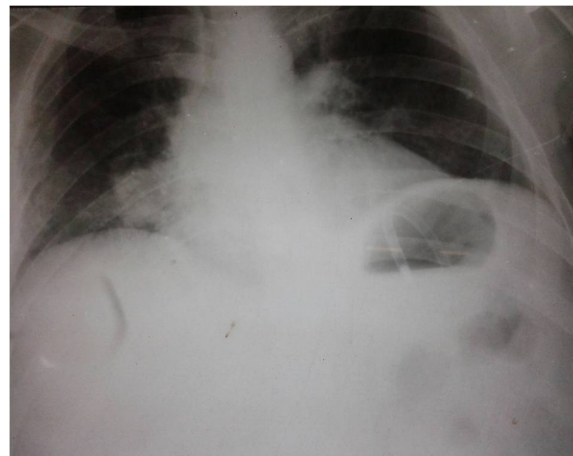


Figure 4: Xray showing presence of nodular lesion in right lower zone

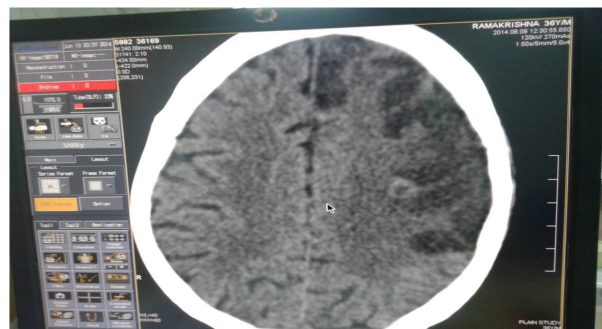


Figure 5: CT Brain showing presence of Strongyloides lesions with peri-lesional edema



Figure 6: Stool examination showing presence of larval forms of Strongyloides

References:

1. Grove, D. I. 1989. Historical introduction, p. 1-9. In D. I. Grove (ed.), *Strongyloidiasis: a major roundworm infection of man*. Taylor & Francis, Philadelphia, Pa.
2. Grove, D. I. 1989. Clinical manifestations, p. 155-173. In D. I. Grove (ed.), *Strongyloidiasis: a major roundworm infection of man*. Taylor & Francis, Philadelphia, Pa.
3. WHO: Strongyloidiasis. http://www.who.int/neglected_diseases/strongyloidiasis/en/.
4. Rotman HL, Yutanawiboonchai W, Brigandi RA, Leon O, Nolan TJ, Schad GA, et al. Complete life cycle in SCID mice. *Exp Parasitol* 1995;81(1):136-139
5. Patil P, Jayshreee RS, Acharya RS, Sridhar H, Babu G, Suresh TM. Fulminant fatal strongyloides stercoralis infection in a postchemotherapy immune suppressed cancer patient. *Med pediatric Oncol* 1999;33 (5):504-505
6. Markis AN, Sher S, Bertiku C, Latour MG. Pulmonary strongyloidiasis: an unusual opportunistic pneumonia in a patient with AIDS. *AJR Am J Roentgenol* 1993;161(3):545-547
7. Ghosh K, Ghosh K. Strongyloides stercoralis septicaemia following steroid therapy for eosinophilia: report of three cases. *Trans R Soc Trop Med Hyg.* 2007 Nov;101(11):1163-5. Epub 2007 Jul 26.
8. Marcos LA, Terashima A, Canales M, Gotuzzo E. Update on strongyloidiasis in the immuno compromised host. *Curr Infect Dis Rep.* 2011 Feb;13(1):35-46. doi: 10.1007/s11908-010-0150-z.
9. Keiser PB, Nutman TB. Strongyloides stercoralis in the Immunocompromised Population. *Clin Microbiol Rev.* 2004 Jan;17(1):208-17.
10. Upadhyay D, Corbridge T, Jain M, Shah R. Pulmonary hyperinfection syndrome with Strongyloides stercoralis. *Am J Med* 2001, 111(2): 167-169.
11. Csermely L, Jaafar H, Kristensen J, Castella A, Gorka W, Chebli AA, et al. Strongyloides hyper infection causing life- threatening gastrointestinal bleeding . *World J Gastroenterol.* 2006 Oct 21;12(39):6401-4.
12. Segarra-Newnham M. Manifestations, diagnosis, and treatment of Strongyloides stercoralis infection. *Ann Pharmacother* 2007;41(12):1992- 2001. Epub 2007 Oct 16.

13. Siddiqui AA and Berk SL. Diagnosis of strongyloides steroralis infection. Clin Infect Dis. 2001 Oct 1;33(7):1040-7. Epub 2001 Sep 5.
14. Porto AF, Neva FA, Bittencourt H, Lisboa W, Thompson R, Alcântara L, et al. HTLV -1 decreases Th2 type of immune response in patients with strongyloidiasis. Parasite Immunol 2001 Sep;23(9):503-7.
15. WHO: Model list of essential medicines. http://www.who.int/medicines/publications/essential_medicines/en/.
16. Buonfrate D, Requena-Mendez A, Angheben A, Muñoz J, Gobbi F, Van Den Ende J, et al. Severe strongyloidiasis: a systematic review of case reports. BMC Infect Dis. 2013 Feb 8;13:78. doi: 10.1186/1471-2334-13-78.