Case Report

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Microbiology Section

Strongyloides Stercoralis Infection in an Immunocompetent Patient Presenting with Shock

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ABSTRACT

Strongyloides Stercoralis is a widespread, soil-transmitted helminth affecting humans. It is generally benign and asymptomatic, eosinophilia and larvae in stool being the only indication of infection. However, it can cause substantial intestinal disease and can disseminate widely to extra-intestinal sites such as lungs, kidney or brain (the hyper infection syndrome), especially in the immunocompromised host. We report here a case that illustrates the fact that *Strongyloides stercoralis* infection can present with features of shock even in an immunocompetent patient.

Key Words: *Strongyloidiasis*, Immunocompetent, Eosinophilia

INTRODUCTION

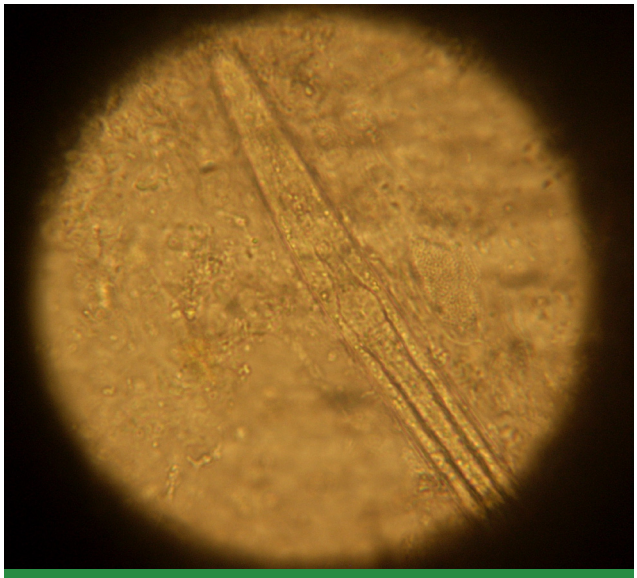
Strongyloides Stercoralis is a widespread, soil-transmitted helminth affecting humans. It is endemic in the tropical and subtropical countries. *Strongyloidiasis* is generally a benign and asymptomatic, eosinophilia and larvae in stool being the only indication of infection. In chronically infected individuals as well as immunocompetent persons the disease is generally asymptomatic [1]. Severe *Strongyloidiasis* is commonly seen in patients with underlying co- morbidities. It can manifest as skin rash, nausea, vomiting, diffuse abdominal pain, diarrhea, fever with chills, cough, dyspnoea, wheezing and rarely central nervous system involvement. It is capable of causing auto-infection in the host. This condition may lead to hyper infection syndrome which has the potential to cause serious life threatening complications. The majority of cases of severe HS are associated with a predisposing, immunosuppressive condition such as haematological neoplasias, human T-cell lymphotropic virus Type-1 (HTLV-1), and organ transplantation. Chronic malnutrition, diabetes mellitus, chronic obstructive pulmonary disease and alcoholism are also recognized pre-disposing conditions for the hyper infection syndrome. We here by report a case that illustrates the fact that *Strongyloides Stercoralis* infection can cause severe life threatening diarrhea and present with features of shock even in an immunocompetent patient.

CASE REPORT

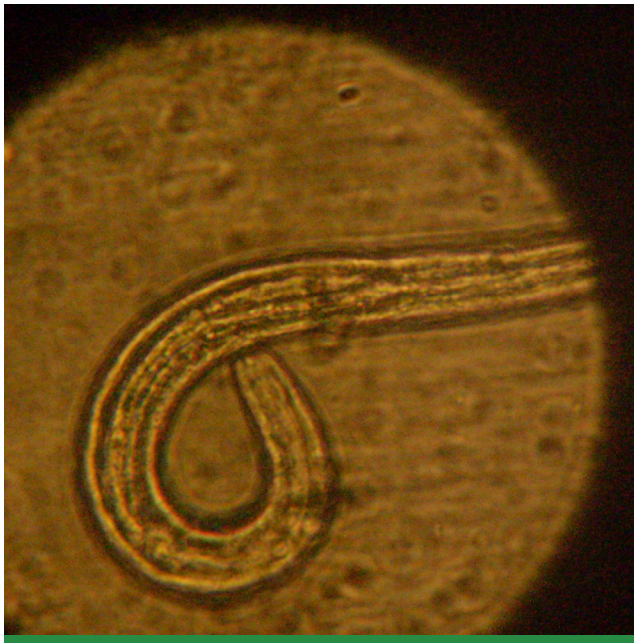
A 29-year-old female labourer from Chhattisgarh, presented to the casualty wing of our hospital with features of shock. She had history of diarrhea, vomiting, cough, dyspnoea, dizziness and severe malaise with low grade fever since 3-4 days. She had loss of appetite for 1 month and had lost 5kg weight during the period. The medical history was unremarkable including not taking corticosteroids, absence of any systemic disorder including diabetes mellitus, autoimmune disease and malignancy or any other immunosuppressive state. There was no history of pain abdomen and steatorrhoea.

[Table/Fig-1]: *Strongyloides Stercoralis* rhabtidiform larvae isolated in fresh stool sample (100X).

On general physical examination, patient was found to be febrile and appeared emaciated. Angular stomatitis and pedal edema were other significant findings. There was no lymphadenopathy or clubbing. Systemic examination including



[Table/Fig-2]: A clearly demarcated rhabditiform esophagus (400X).



[Table/Fig-3]: The prominent mid level genital primordium (400X).

abdominal examination was unremarkable. Her BP was 90/60 mm Hg, pulse 120/min., RR 30/minutes. Peripheral pulses were found to be feeble.

Investigations revealed haemoglobin of 10gm% with a normal laeukocyte and platelet count but an eosinophilia to a tune of 38%. Kidney function tests and serum electrolyte levels were deranged, blood urea was 115mg% and creatinine was 3mg%. Urine examination, abdominal X-Ray and ultrasound abdomen was normal. The patient was negative for HIV serology. Chest X-Ray revealed focal interstitial infiltrate on the right side of chest. Stool examination revealed bulky, frothy, foul smelling stools along with undigested food particles. There was no mucus, pus or blood in stools. Occult blood test was positive. Microscopic examination of stool done on three occasions revealed numerous rhabditiform larvae of *Strongyloides Stercoralis*. The larvae were around 300µm in length and could be easily identified by their typical hourglass shaped esophageal structure, a post-median constriction and a prominent genital primordium. She was given supportive treatment initially followed by albendazole 400mg twice daily for 3 days and oral metronidazole 400mg thrice daily for 7 days. The patient showed dramatic clinical improvement by second day. The frequency of stools decreased immediately after albendazole treatment. Her vitals stabilized and the kidney function tests returned to normal. The larvae of *Strongyloides Stercoralis* disappeared on stool examination on the second day of treatment and diarrhea was completely resolved on third day. On follow-up she had no diarrhea and had started to gain weight.

DISCUSSION

Strongyloides Stercoralis is a nematode that infests the human intestine especially in the tropical and sub-tropical regions, most of these infections being asymptomatic. However, it can cause substantial intestinal disease and can disseminate widely to extra intestinal sites such as lungs, kidney or brain (the hyperinfection syndrome), especially in the immunocompromised host. In immunocompetent hosts, these parasites cause a low grade chronic infection, which has been seen even up to 40 years after exposure [2]. This report describes the case of an immunocompetent female labourer with *S. Stercoralis* infection presenting to the casualty with features of shock. Similar studies on *S. Stercoralis* are also obtained from Chandigarh in a 55-year old immunocompetent male patient of chronic diarrhea having malabsorption [2], in a 63-year old immunocompetent male patient from Baroda having off and on diarrhea along with hyperinfection and extreme eosinophillia [3], in a 12-year old immunocompetent boy from Turkey presented with acute abdomen also having amebiasis and giardiasis [4] and in a 69-year old immunocompetent male patient from Ohio having disseminated *S. Stercoralis* infection [5].

The parasite has a unique and complex lifecycle wherein the larvae exist in 2 forms: the free living rhabditiform and filariform infective forms. The cycle starts with the infectious filariform larvae penetrating the skin and travelling via lymphatics or

bloodstream to the lung. After penetrating in the alveoli the larvae continue to migrate up to the airways until they are swallowed. In the duodenum and proximal jejunum the larvae mature into adult females which live threaded in the intestinal mucosa. The larvae can produce up to 40 eggs a day by mitotic parthenogenesis. Once these eggs hatch, rhabditiform larvae are released. These larvae can either pass in the stools, continuing the soil based cycle, or can cause autoinfection [6]. Our patient belongs to a lower socio-economic status, labourer by occupation and gives history of working barefoot. Her hygienic habits were also noted to be poor. These have all been described as potential risk factors and are probably responsible for the patient acquiring the infection.

Our patient had a normal blood picture except an eosinophilia to a tune of 38%. Different studies claim that the presence of eosinophilia in peripheral blood is encountered in up to 70% of the patients with strongyloidiasis [7]. Thus it is suggested that a laboratory finding of eosinophilia in patients with gastro-intestinal symptoms should prompt the differential diagnosis of enteroparasitosis.

The physical examination and the laboratory tests of the patient revealed no abnormality except for the presence of numerous *Strongyloides Stercoralis* larvae in the stools and eosinophilia on blood picture. Thus, her malaise, emaciated look, loss of weight and appetite and signs of malabsorption like angular stomatitis can be explained by the parasitosis. Focal interstitial infiltrates seen in the lung are attributed to the allergic reaction produced by the migration of filariform larvae. Presence of numerous *Strongyloides Stercoralis* larvae in 3 consecutive stool samples with a significant eosinophilia and absence of any other predisposing condition leading to shock confirms the parasitosis as the cause of the patient's fragile clinical condition. Also the fact that following specific antihelminthic treatment, there was complete clearance of parasitosis and resolution of eosinophilia leading to a dramatic clinical improvement, further corroborates our diagnosis

CONCLUSION

Though rare, Strongyloidiasis can present with severe life threatening diarrhea even in immunocompetent patients. Thus the authors suggest that a high index of suspicion should be maintained by clinicians treating patients in endemic areas presenting with gastro-intestinal symptoms coupled with eosinophilia.

REFERENCES

[1] Mora CS, Segami MI, Hidalgo JA. *Strongyloides Stercoralis* hyperinfection in Systemic Lupus Erythematosus and the Antiphospholipid Syndrome. *Semin Arthritis Rheu* 2006;36:135-43.
[2] Atul S, Ajay D, Ritambhara N, Harsh M, Ashish B. An unusual cause of malabsorption in an immunocompetent host. *J Ayub Med Coll Abbottabad* 2005;17(1):85-86.
[3] Marathe A, Date V. *Strongyloides Stercoralis* hyperinfection in an immunocompetent patient with extreme eosinophillia. *J parasitol* 2008;94(3):759-60.
[4] Dinleyici EC, Dogan N, Ucar B, Ilhan H. Strongyloidiasis associated with amoebiasis and giardiasis in an immunocompetent boy presented with acute abdomen. *Korean J Parasitol* 2003;41(4):239-42.
[5] Husni RN, Gordon SM, Longworth DL, Adal KA. Disseminated *Strongyloides stercoralis* infection in an immunocompetent patient. *Clin infect dis* 1996;23:663.
[6] Concha R, Harrington W, Rogers Al. Intestinal strongyloidiasis: recognition, management, and determinants of outcome. *J Clin Gastroenterol* 2005;39:203-11.
[7] Lim S, Katz K, Krajden S, et al. Complicated and fatal *Strongyloides* infection in Canadians: risk factors, diagnosis and management. *Can Med Assoc J* 2004;171:479-84.

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