

Strongyloides Stercoralis Hyperinfection in an Immunocompetent

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ABSTRACT

Strongyloides stercoralis is a widespread, soil-transmitted helminth affecting humans. A 35-year-old female presented with diarrhea, vomiting, abdominal pain, severe malaise with low grade fever since 3-4 days. She complained of crampy, severe, upper abdominal pain, anorexia, vomiting and diarrhea. She had loss of appetite for 1 month and had lost 5 Kg weight during the period. We are reporting a case of *strongyloides stercoralis* hyperinfection in an immunocompetent.

Keywords: *Strongyloides stercoralis*, hyperinfection, immunocompetent

INTRODUCTION

Strongyloides stercoralis is a widespread, soil-transmitted helminth affecting humans. It is endemic in Africa, Asia, Southeast Asia, as well as in Central and South America. The clinical manifestations of the disease range from a spectrum of asymptomatic carrier state to chronic skin, gastrointestinal, and pulmonary disease to hyper infection and disseminated states.^[1] The hyper infection syndrome happens from the enormous multiplication and migration of infective larvae especially in an immune suppressed state.

The manifestations of hyperinfection syndrome are divided, based on the system of origin, into intestinal and extraintestinal disease mainly involving the respiratory tract.^[2] The detection of increased number of larvae in the stool and/or sputum is a hallmark of hyperinfection.^[3] The risk factors for hyper-infection and disseminated disease are immunosuppressive therapy (particularly steroids), human T-lymphotropic virus 1

(HTLV1) infection, solid organ transplantation, hematologic malignant disease, especially lymphoma and hypoglobulinemia, hematopoietic bone marrow and stem cell transplantation, cancer chemotherapy, chronic alcohol consumption, uremia, severe malnutrition and diabetes mellitus. ^[4] This case describes *strongyloides stercoralis* hyperinfection in an immunocompetent patient.

CASE REPORT

A 35-year-old female presented with diarrhea, vomiting, abdominal pain, severe malaise with low grade fever since 3-4 days. She complained of crampy, severe, upper abdominal pain, anorexia, vomiting and diarrhea. Her stools were yellow, watery, and foul smelling and numbered 10 to 15 per day. She had loss of appetite for 1 month and had lost 5 Kg weight during the period. The medical history was unremarkable including not taking corticosteroids, absence of any systemic disorder including diabetes mellitus, autoimmune disease and



Figure 1: Low power view rhabditi form larvae of strongyloides stercoralis



Figure 2&3: High power view rhabditi form larvae of strongyloides stercoralis

malignancy or any other immunosuppressive state.

On general physical examination, patient was found to be febrile and appeared emaciated. Angular stomatitis and grade 1 ankle edema were other significant findings. There was no lymphadenopathy or clubbing. Systemic examination including abdominal examination was unremarkable. Her Blood pressure was 90/60 mm Hg, pulse 120/min, respiratory rate 30/minute. Initial complete blood count (CBC) showed normocytic anemia (hemoglobin 8.7 g/dL) and leukocytosis (11,650/mm³) with left shift (73% neutrophils). She was hyponatremic (126 mmol/L), hypokalemic (2.7 mmol/L) and an eosinophilia to a tune of 6%. Renal function tests: serum creatinine – 1.8mg/dl, Blood urea 46mg/dl, serum uric acid 3.6 mg/dl.

Urine examination, abdominal X-Ray and ultrasound abdomen was normal. The patient was non reactive for HIV serology. Chest X-Ray was normal.

Stool examination revealed bulky, frothy, foul smelling, no mucus, pus or blood in stools. Occult blood test was negative. Microscopic examination of stool done on three occasions revealed numerous rhabditiform larvae of *Strongyloides Stercoralis*. She was given supportive treatment initially followed by albendazole 400 mg twice daily for 3 days and oral metronidazole 400 mg 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 third day of treatment and diarrhea was completely resolved.

DISCUSSION

Strongyloides stercoralis is a nematode with its life cycle initiated when infective filariform larvae penetrate the human skin or mucous membrane. The parasites enter the circulation, pass through the lungs, migrate up the

larynx, and are then swallowed. Larvae develop into adults in the duodenum. Females deposit their eggs in the intestinal mucosa, and these hatch into rhabditiform larvae that migrate into the intestinal lumen and pass into the feces.^[5] *S. stercoralis* is unique among infectious parasites because it completes its life cycle entirely within the human host, causing autoinfection and potentially hyperinfection.

Autoinfection occurs when rhabditiform larvae develop into filariform larvae in the large intestine. The filariform larvae then invade the intestinal mucosa and enter the blood to start another cycle without leaving the body of the host. Hyperinfection syndrome refers to an increase in parasite burden due to acceleration of the autoinfection cycle, without an accompanying spread of larvae outside the usual migration pattern.^[6] The development or exacerbation of gastrointestinal and pulmonary symptoms as well as the detection of increased numbers of larvae in stool or sputum are the hallmarks of hyperinfection.^[3] These were all manifested in our patient.

A definitive diagnosis of strongyloides infection is made by detection of strongyloides larvae in stool or body fluids.^[7] An examination of a single stool sample will detect rhabditiform larvae 25% of the time.^[4] Eosinophilia is usually the only indication of *S. stercoralis* infection, but it is mild (5%–15%) and nonspecific.^[4] A limiting factor is the absence of this finding in a number of cases of hyperinfection or disseminated infection as is seen in our case.

Other risk factors for SS infection include travelling to an endemic region and low socio-economic status with poor hygiene conditions.^[8] However, there was no evidence for any underlying immunocompromising disease, 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.

Albendazole, thiabendazole, or ivermectin are recommended drugs for strongyloidiasis.^[9] With the treatment of albendazole and metronidazole, clinical and laboratory findings of our patient were improved. Strongyloidiasis is commonly reported in immunocompromised patients, however our patient was immunocompetent who responded well to albendazole and there was no strongyloides larvae in stool after completion of therapy.

CONFLICT OF INTERESTS

The authors report no conflict of interest.

FUNDING: None

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