Volume : 2 | Issue : 9 | September 2013 • ISSN No 2277 - 8179

Research Paper

Strongyloides Stercoralis Hyperinfection Presenting as Subacute Intestinal Obstruction

Microbiology

KEYWORDS : Hyperinfection, *Strongyloides stercoralis*,HIV

Vinay Khanna	Department of Microbiology, Kasturba Medical College, Manipal University, Manipal-576104, Karnataka,India
Anusha G	
Manjunatha Hande H	
Shashidhar V	
Chiranjay Mukhopadhyay	

ABSTRACT

A 25 year old male with no premorbid illness presented with abdominal pain for 9 days and associated vomiting and constipation for the past 2 days. The abdominal pain increased after food intake and was associated with nausea and vomiting. He also experienced loss of appetite and loss of weight for the last 2 months. He had no past history of tuberculosis. On examination, the patient had pallor and a palpable mass in the right lumbar region. X ray Abdomen showed multiple air fluid levels and hence patient was initially suspected to have subacute intestinal obstruction. Laboratory analysis revealed normocytic normochromic anaemia with eosinophilia, high platelet counts, normal serum total protein levels, reversed albumin globulin ratio and normal serum liver and pancreatic function tests. Parasitology examination of the stool showed numerous larva of Strongyloides stercoralis. Agar stool culture was done and tracks of migrating Strongyloides stercoralis larva were seen. Patient was diagnosed to have Strongyloides stercoralis hyperinfection syndrome and was treated with T. Ivermectin. Patient showed symptomatic improvement in two days of starting therapy. He was evaluated for Human immunodeficiency virus (HIV) and was found to be HIV positive with a CD4 count of 155. As patient requested discharge from the hospital due to financial constraints, a repeat stool examination could not be done to prove eradication of the larva from the intestine.

Introduction:

Strongyloides stercoralis is a nematode which commonly inflicts patients with gastrointestinal symptoms such as diarrhea (rarely even constipation), abdominal pain and anorexia.[5] Pulmonary manifestations of *Strongyloides stercoralis* infection occur when the larva of this nematode enters the lung. *Strongyloides stercoralis* infection is common in tropical and subtropical regions of the world(1,9). Hyperinfection with *Strongyloides stercoralis* occurs when there is an exacerbation of gastrointestinal and pulmonary symptoms, and when there is increased number of larva in the sputum or stool specimens of the patient. Thus hyperinfection refers to an acceleration of the normal life cycle of the parasite in man. Disseminated infection occurs when the larva of *Strongyloides stercoralis* migrates beyond the pulmonary autoinfective cycle. In this case report, we discuss a case of *Strongyloides stercoralis* hyperinfection who presented with features of subacute intestinal obstruction(1).

Case report

A 25 year old male presented with abdominal pain for 9 days. Pain was in the periumblical region, intermittent, intense in nature, with no radiation. It increased within 20 minutes of food intake and decreased after a few hours. He also complained of not passing stools for the past 3 days. He had nausea and nonbilious, non-projectile, non-blood stained vomiting for the past 2 days. Patient also had loss of appetite and loss of weight (about 5 kilograms in the past 2 months). There was no past history tuberculosis, anti-inflammatory drug intake, hypertension or diabetes mellitus. On examination, he was cachexic, pulse rate was 80 per minute and blood pressure was 130/80 mm Hg. There was no pallor or lymphadenopathy. Abdominal examination revealed no organomegaly or free fluid. A mass was palpable in the right lumbar region, 4 X 3 cm,with defined margins, smooth, non- tender, mobile with no pulsations. The bowel sounds were sluggish. Examination of other organ systems was normal.

Investigation:

X ray abdomen showed multiple air fluid levels in the abdomen suggestive of intestinal obstruction. Blood work up showed normocytic normochromic anaemia (haemoglobin : 12.1mg/dl) , with relative eosinophilia (10.2% of white blood cells), elevated platelet count (464 x 103 /µl) and raised ESR (22mm / hr). Pancreatic and liver function tests were within normal limits. Patient had normal serum total protein levels but reversed serum albumin globulin ratio. USG and CT Abdomen were normal. Patient was given enema to pass stools. Stool was sent for parasitology examination and revealed numerous rhabditiform larvae of Strongyloides stercoralis. Tracks made by migrating larva were seen on the agar plate and larvae of *Strongyloides stercoralis* were seen on microscopic examination of the tracks on the agar plate. HIV serology of the patient was tested and was positive. CD4 count was found to be 155. Sputum examination of the patient did not yield larval forms of S.stercoralis.

Treatment :

The initial provisional diagnosis of the patient was subacute intestinal obstruction and hence he was kept nil per oral and a nasogastric tube was inserted. As USG and CT Abdomen images showed normal images, patient was given enema and he passéd stools. Patient was started on T. Ivermectin after the diagnosis of *Strongyloides stercoralis* infection. He was found to have HIV infection and a CD4 count of 155. He was advised to undergo prophylaxis for Pneumocystis carinii infection with oral trimethoprim sulfamethaxozole (cotrimoxazole). As the patient wanted to continue his treatment in a government hospital due to financial constraints, he was discharged from the hospital with instructions to continue therapy with T. Ivermectin for five days and to undergo a follow up stool examination after the course of the antiparasitic treatment.

Discussion:

Strongyloides stercoralis has a global prevalence of 3 -100 million cases per year(3) .In south east asia the prevalence is 30-90%.(15) In India, the prevalence of this infection is 5.3 %.(13) Among immunocompetent individuals, children are commonly affected by the *Strongyloides stercoralis* infection. In immunocompromised patients, such distinction is not seen(16) . Our case shows a similar situation.

It is commonly seen in immunocompromised patients like those who have malignancies (especially HTLV-1), human immunodeficiency virus (HIV) infection, glucocorticoids therapy, chemo-

therapy, malnutrition(5,8,14) etc It is also seen among individuals with occupation which involves working in sewage or soil contaminated with human waste . In the case of our patient, immunosuppression was present as the patient was infected with HIV and also had a low CD4 count of 155.

Hyperinfection syndrome occurs in 1.5 to 2.5% cases of strongyloidosis. Hyperinfection syndrome commonly occurs in immunocompromised individuals(4). In a study done in Thailand, 30.1% of patients diagnosed with *Strongyloides stercoralis* infection were cases of hyperinfection and all these patients were immunocompromised(11). A similar scenario was seen in our case too. Mortality in cases with hyperinfection syndrome occurs in 15- 87% cases.(8)

Hyperinfection syndrome commonly presents with nausea, vomiting, diarrhea, cough, dyspnea ,fever and gastrointestinal hemorrhage(9) . It is diagnosed by the presence of large numbers of larva in the stool or sputum sample(1) .In the case of our patient, numerous larva were seen in the wet mount of stool sample but no larva was seen in the sputum sample. And our case presented with features of subacute intestinal obstruction. Dash et al reports a case of *Strongyloides stercoralis* infection which presented as acute intestinal obstruction which was treated with T. Albendazole and T. Ivermectin (10). Boken et al, describes a case of *Strongyloides stercoralis* hyperinfection which presented with small intestinal obstruction(12). Tarr PE et al, reports a case of hyperinfection syndrome which presented as paralytic ileus(2).

Microbiological laboratory investigations for the identification of *Strongyloides stercoralis* are wet mount of stool sample after performing the Baermann and formalin ethyl actetate concentration techniques, agar stool culture method , Harada -Mori filter paper culture method, serological tests for antibodies against an the crude antigenic extract of the filariform larva(1,3,6). In our case, diagnosis was made by saline wet mount of stool sample and agar stool culture methods was done for further development of larvae into adult worm.

Prognosis of patients with *Strongyloides stercoralis* infection is good with early diagnosis and treatment. In the past, the treatment modalities of *Strongyloides stercoralis* infection was azole group of antiparasitic drugs namely thiabendazole, mebendazole and albendazole. But due to the high side effects and poor bioavailability of these drugs, they have been replaced with ivermectin. Previous studies have shown successful treatment of patients with hyperinfection syndrome using ivermectin (1,2,6,). In our case too, the patient showed complete recovery using ivermectin.

Treatment is considered successful when there is symptomatic improvement and negative stool cultures(1). Complete eradication of the parasite is important as the presence of even one nematode can trigger a hyperinfection syndrome. In our case, we were not able to assess the recovery of the patient as the patient requested discharge from the hospital due to financial constraints.

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