Strongyloidiasis after corticosteroid therapy: A case report

Jangala Mohan Sidhartha, Barabari Man Mohan, Maddinani Penchalaiah, Lomati Venkata Pavan Kumar Reddy

ABSTRACT

Introduction: Strongyloidiasis is a parasitic infection which can be divided into asymptomatic carriage, intestinal disease, hyperinfection with or without dissemination and it is also capable of a free living cycle. It is caused by Strongyloides stercoralis in humans. Generally in a healthy host, it is an asymptomatic infection but it causes hyper infection involving multiple organs in immunocompromised patients.

Case Report: We report an intestinal strongyloidiasis hyper-infection in a chronic obstructive pulmonary disease (COPD) patient of 66 years old. The patient had a history of receiving corticosteroid therapy frequently for acute exacerbations of COPD symptoms, during one of such episode the patient presented to our center, after receiving corticosteroid therapy the patient recovered from the episode but developed diarrhea, investigations done for diarrhea evaluation revealed larvae of Strongyloides in stool sample. Anthelmintic therapy, albendazole for three days followed by ivermectin for five days were given, the frequency of stools decreased to a great extent even though not completely cured.

Conclusion: Strongyloidiasis a helminthic infection common in southeast asia and other sub Saharan countries, the longevity of this infection is for decades due to autoinfection so, regular screening for this parasite in Immunocompromised patients should be done.
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Keywords: Asymptomatic infection, Immunodeficiency, Nematodes, Strongyloidiasis

INTRODUCTION

Strongyloidiasis is a parasitic infection caused by Strongyloides stercoralis. It is dominant in the temperate, tropical and subtropical areas [1]. S. stercoralis is distinguished by its ability—unique among helminths to replicate in the human host. This capacity permits ongoing cycles of autoinfection as infective larvae are internally produced. Strongyloidiasis can thus persist for decades without further exposure of the host to exogenous infective larvae. In immunocompromised hosts, large numbers of invasive Strongyloides larvae can disseminate widely and can be fatal [2]. Uncontrolled hyper infection manifestations are seen in many organs where the host-parasite relationships can be altered by certain predisposing factors such as corticosteroid therapy, malnutrition and anticancer drugs [3]. However, the intestinal involvement is very rare [4]. Many individuals infected with this parasite are asymptomatic. However,
in patients with defects in cell-mediated immunity as a result of malnutrition, immunosuppressive drugs, an unrecognized asymptomatic infection may convert into severe infection.

CASE REPORT

A 66-year-old male, resident of Kamalapuram, a small town in Kadapa region of the Andhra Pradesh (India), presented to General Hospital on 11 April 2014. His chief complaints were progressive breathlessness from last two weeks, pedal edema, fever, headache, cough with sputum, abdominal pain prior to admission. He was an ex-smoker and alcoholic.

On examining the patient, he was a lean built man with significant dehydration. His temperature was 100°F, pulse rate 90/min, blood pressure 150/90 mmHg. He maintained a saturation of 93 on ambient air and respiratory rate 24/min. There were few exacerbation in left lower zone. He had no icterus and there was no significant lymph adenopathy. Epigastrium tenderness was observed in the patient. The liver, spleen and kidneys were not palpable.

Patient’s Medication History and Treatment

Patient's past history was notable for chronic obstructive pulmonary disease (COPD) and old pulmonary tuberculosis.

Investigations

Patient's reports showed HIV non-reactive and HBsAg was negative. Other laboratory findings were white blood cell count 11700 cells/mm³ with a normal differential count and 3% eosinophils. Absolute eosinophil count 340 cells/mm³ and erythrocyte sedimentation rate was 15 mm/h, blood urea 74 mg/dL and 1.9 mg/dL was serum creatinine. He had a grade one renal parenchymal changes and normal sized kidneys on ultrasound. Computed tomography (CT) scan of chest showed thick and thin walled cystic bronchiectatic changes in apical segments of right upper lobe (Figure 1A), small modular infiltrates were seen in left lower lobe and in lateral basal segment of right lower lobe (Figure 1B). Stool microscopy showed heavy loads of “strongyloidiasis” (Figure 2). Sputum culture grew Pseudomonas species and Klebsiella oxytoca, sensitive to gentamycin; however, it was thought to represent colonization. Sputum smear for acid-fast bacilli (AFB) was negative.

Treatment

A diagnosis of COPD with acute exacerbation was observed, for which he was given intravenous ceftriaxone 1 g twice daily, azithromycin 500 mg once daily, salbutamol and ipratropium bromide nebulizers. He was not responded and on 30 April 2014 patient received systemic corticosteroid (hydro cortisone 100 mg IV TID). After three days of initiation of corticosteroid therapy, the patient developed loose stools (10 times per day). After obtaining stool examination and conformed to “Strongyloidiasis” he was treated with albendazole 400 mg daily for three days, patient was not responded then ivermectin 12 mg daily and metronidazole 400 mg twice in a day for next five days. Decrease loose stool frequency four times per day and improved his vitals. However, he discharged against medical advice.

DISCUSSION

Strongyloidiasis is intestinal parasitic infections caused by two species in humans; they are Strongyloides stercoralis (S. stercoralis) and another Strongyloides fulleborni (S. fulleborni). The symptoms related to strongyloidiasis depends on nematode's systemic passage, its local cutaneous involvement, or both. Most of the patients who develop hyperinfection syndrome are receiving corticosteroids often for COPD. Pulmonary strongyloidiasis may mimic COPD exacerbation [5]. Hyperinfection may develop as early as four days after the onset of corticosteroid therapy and as late as several years up to 20 years [6].

Detection of larvae in stool or sputum is the absolute finding of strongyloidiasis. Sometimes screening is inadequate in performed stool studies are alone. However, approximately 50% sensitivity was noted in a single stool exam for making the diagnosis [5]. Albendazole, thiabendazole, mebendazole and ivermectin are the effective drug therapy for S. stercoralis infection. In recent, more studies presenting ivermectin as the drug of choice in the treatment of strongyloidiasis. Monitoring response of the treatment is problematic in the stool specimen with recognition of Strongyloides larvae. Recent study by Edmilson Bastos de Moura et al. proved...
that therapy with subcutaneous ivermectin was successful in immunocompromised disseminated strongyloidiasis patient [7].

The presentation in our patient was initially with severe pulmonary disease like in various aspects to that called by others. These clinical manifestations are non-specific and there is no improvement after three weeks of therapy. Later he received a short course of hydrocortisone therapy (three days); he developed the hyperinfection syndrome. Similarly, a study showed that a patient diagnosed with *S. stercoralis* after receiving a course of corticosteroid therapy (13 days) [8]. *S. stercoralis* inactive in the host’s intestine, it can stay nearly 30 years; it may apparent when the host immunity decreases either immunosuppressive drugs and/or disease [9]. Our case suggests that there is a need to be careful in such patients to allow for early diagnosis and institution of proper treatment in order to avoid such unfortunate effect. It may not be difficult to screen and serology before initiating steroid therapy to prevent the progress of Strongyloidiasis hyperinfection in immunocompromised patients from endemic areas. Screening may not be commended patients before starting short courses of corticosteroids for COPD. It may consider in severe cases of COPD using frequent steroids courses and they are coming from endemic areas.

Screening is necessary for preventing the strongyloidiasis hyperinfection in severe cases of COPD using frequent steroids courses and they are coming from endemic areas. To promote improving the living conditions of rural population as providing a safe drinking water supply and good sanitary measures, and instructing about the disease in high-risk populations. Early diagnosis of any strongyloides infection may helpful for outcomes of the therapy; otherwise increased mortality rate due to fatal complications.

The therapy with subcutaneous ivermectin was successful in immunocompromised disseminated strongyloidiasis patient.

**CONCLUSION**

Strongyloides hyperinfection requires prompt diagnosis and initiation of antihelmintic therapy. Even with appropriate therapy, the mortality in disseminated Strongyloidiasis is much higher. In light of this, appropriate screening of high risk individual should be carried out prior to the initiation of therapy that is associated with immunosuppression.

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**Acknowledgements**

We thank Dr. Aravind, Dr. Kiran, Dr. Hima Bindhu and Dr. Hari Charan for their guidance and support.

**Author Contributions**

Jangala Mohan Sidhartha – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published Barabari Man Mohan – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published Maddinani Penchalalaih – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

**Guarantor**

The corresponding author is the guarantor of submission.

**Conflict of Interest**

Authors declare no conflict of interest.

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