Case Report

A case of masquerading bronchopneumonia

Tadepalli Karuna, Sagar Khadanga[1]

Department of Microbiology, Hi-Tech Medical College and Hospital, Bhubaneswar, [1]*Department of General Medicine, M.K.C.G, Medical College, Berhampur, Ganjam, Odisha, India*

ABSTRACT

S. stercoralis infection is very common in South East Asian countries including India. Chronic infection is very common with symptoms of diarrhea, abdominal pain, nausea, vomiting, anemia, and cough. Hyperinfection and dissemination usually occur in immunocompromised patients with symptoms mimicking asthma, COPD, or aseptic meningitis. Very few cases of hyperinfection and dissemination have been documented in immunocompetent patients. We report this case for its rarity and future references.

KEY WORDS: ARDS (Acute respiratory distress syndrome), hyperinfection, immunocompetent, rhabditiform larva, *S. stercoralis* (*strongyloides stercoralis*)

Address for correspondence: Dr. T Karuna, Assistant Prof., Department of Microbiology, Hi-Tech Medical College and Hospital, Block 3, Flat 1, Pandara, Rasulgarh, Bhubaneswar, Odisha, India. E-mail: karunakhadanga@yahoo.co.in

INTRODUCTION

Strongyloides stercoralis is a human intestinal nematode that is considered a common parasitic disease in tropical and subtropical areas. It is endemic in Southeast Asia, Africa, West Indies, South America, Bangladesh, and Pakistan.[1] The ability to replicate in the human host permits autoinfection of *S. stercoralis* leading to chronic infection.

Hyperinfection occurs when the parasite load increases and the rhabditiform larvae penetrate the bowel mucosa and finally reaches the organs normally involved in pulmonary autoinfection cycle (GI tract, peritoneum, and lungs). Dissemination is defined as larva migrating to end organs not usually involving the normal life cycle of the parasite such as brain and skin. Hyperinfection and disseminated infection are common in immunocompromised hosts. There are very few case reports of hyperinfection or disseminated *S. stercoralis* infection in immunocompetent patients. We present a case of hyperinfected *S. stercoralis* infection in an adult male patient presenting with respiratory symptoms.

Videos available on www.lungindia.com

Access this article online

Quick Response Code:

Website: www.lungindia.com

DOI: 10.4103/0970-2113.129858

CASE REPORT

A 48-year-old farmer from eastern part of coastal India presented to the emergency department with complaints of low-grade fever for 15 days, cough with expectoration for 10 days, and gradually increasing breathlessness for 5 days. The patient was suffering from cough with expectoration and breathlessness on and off for the past 2 years. He was neither a diabetic nor a hypertensive. At the time of admission, the patient was confused, irritable, cyanosed, and tachypneic. His pulse rate was 120/min, blood pressure was 90/60 mm of Hg, temperature was 101°F, respiratory rate was 30/min, and oxygen saturation was 78%. Chest examination revealed bilateral coarse crackles and wheezes. There was tenderness over right hypochondrial area of abdomen. Cardiovascular and central nervous system examination were unremarkable.

At the time of admission, Hb - 8.8 gm/dl, TLC - 10.8 × 10^3/cmm, DC-P 72%, L 22%, E 4%, and absolute eosinophil count - 480/cmm, TPC – 183 × 10^3/cmm. ESR - 36 1st hr. RBS was 96 mg/dl, BUN - 28 mg/dl, serum creatinine - 1.2, serum Na^+ - 128 mmol/l, serum K^+ - 3.9 mmol/l. ABG analysis revealed pH - 7.44, $PaCO_2$ – 32 mm Hg, PaO_2 – 67 mm Hg, bicarbonate – 24 meq/l (Respiratory alkalosis). His HIV status was negative. A provisional diagnosis of bronchopneumonia, and septic shock was made, and the patient was shifted to ICU. Medication on admission included piperacillin-

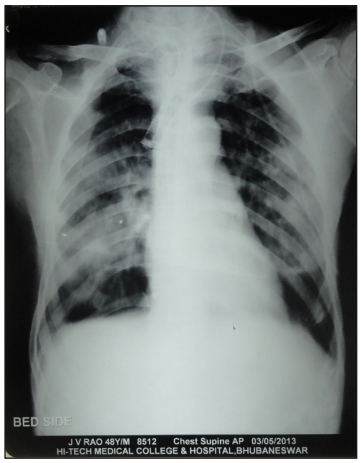

Figure 1: X-ray chest showing features of ARDS

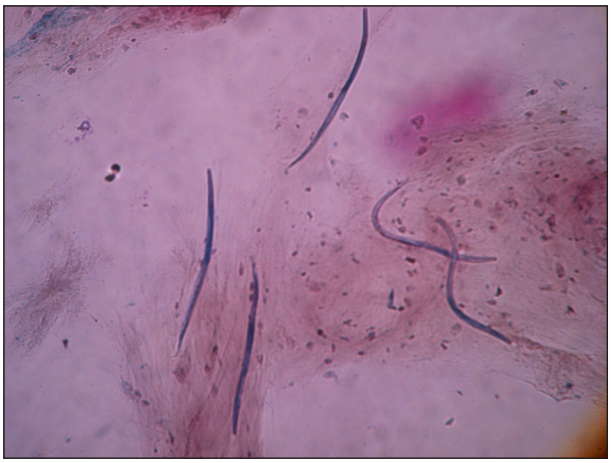

Figure 2: *S. stercoralis* rhabditiform larvae in sputum on ZN staining

Figure 3: *S. stercoralis* larvae on wet film observation of sputum sample

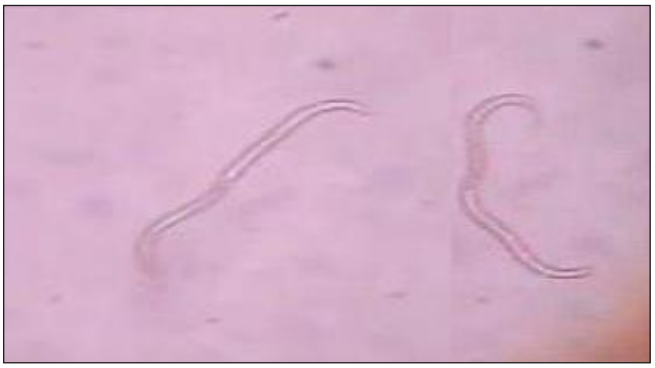

Figure 4: Motile rhabditiform larvae of *S. stercoralis* on wet film observation of sputum.

Figure 5: Rhabditiform larva of *S. stercoralis* in stool sample of patient

tazobactum, injectable methylxanthine, and nebulized bronchodilator. Blood and sputum were sent for aerobic culture along with sputum Gram stain and ZN stain before starting the antibiotic. Chest X-ray at the time of admission revealed bilateral interstitial pattern of opacities [Figure 1]. On the 2nd day, he developed ARDS and was put on mechanical ventilator.

While examining the Gram stain and ZN stain smears of sputum, plenty of larvae were seen [Figure 2]. On wet mount, plenty of actively motile larvae of *S. stercoralis* were found [Figures 3 and 4; Videos 1 and 2]. Subsequent stool sample was also positive for rhabditiform larvae [Figure 5]. The blood culture yielded *E. coli* on subsequent days.

The patient's condition gradually deteriorated inspite of adding oral Ivermectol and intravenous imipenam. The patient succumbed on day 5.

DISCUSSION

S. stercoralis is a unique intestinal nematode causing chronic asymptomatic infection, hyperinfection, and dissemination due to its ability to produce autoinfection in the intestine and due to penetration of the perianal skin by the filariform larvae. Hyperinfection and dissemination syndrome usually occur in immunocompromised patients includes those undergoing steroid therapy or chemotherapy, and those with hematologic malignancy, kidney and bone marrow transplant, HIV infection, and hypogammaglobulinemia.[2] Hyperinfection and dissemination syndrome has a very high mortality rate (up to 87%).[3] Complications of hyperinfection and disseminated disease include bacterial and fungal infections, sepsis, and meningitis. Secondary bacterial

infection occurs because of the leakage of gut flora from an ulcerative bowel mucosa or as a result of bacteria carried on the surface of the larvae when they migrate into the host's circulation. Therefore, blood cultures commonly grow *Escherichia coli*, *Klebsiella pneumoniae*, *Proteus mirabilis*, *Pseudomonas*, and *Enterococcus fecalis*.[4]

S. stercoralis hyperinfection has been documented in immunocompetent patients very rarely. A case has been documented from Puducherry in an elderly male who presented with fever, cough, breathlessness, and pain abdomen who responded to oral ivermectol.[5] A study from SGPGIMS documented 15 cases of strongyloidiasis (7 in immunocompromised and 8 in immunocompetent patients).[6] The detail case history of the non-immunocompetent patients was not given.

Chronic infection often shows eosinophilia. But, eosinophilia is often absent in hyperinfection syndrome,[7] as in our case.

In conclusion, the clinical manifestations of *Strongyloides* hyperinfection are diverse. Immunocompetent patients are not immune to develop hyperinfection or dissemination syndromes. Besides showing gastrointestinal symptoms, it may mimic acute exacerbation of underlying COPD or new-onset asthma and be complicated with Gram-negative bacteremia. Therefore, stool and sputum examinations are important when the clinical picture is suspicious for *S. stercoralis* hyperinfection.

REFERENCES

1. Boulware DR, Stauffer WM, Hendel-Paterson BR, Rocha JL, Seet RC, Summer AP, *et al.* Maltreatment of Strongyloides infection: Case series and worldwide physicians-in training survey. Am J Med 2007; 120:541-8.
2. Keiser PB, Nutman TB. Strongyloides stercoralis in the immunocompromised Population. Clin Microbiol Rev 2004; 17:208-17.
3. Siddiqui AA, Berk SL. Diagnosis of Strongyloides stercoralis infection. Clin Infect Dis 2001; 33:1040-7.
4. Liu HC, Hsu JY, Chang KM. Strongyloides stercoralis Hyperinfection presenting with symptoms mimicking acute exacerbation of chronic obstructive pulmonary disease. J Chin Med Assoc 2009; 72:442-5.
5. Girija S, Kannan S, Jeyakumari D, Gopal R. Hyperinfection with Strongyloides in a HIV-negative elderly male. Trop Parasitol 2012; 2:64-6.
6. Ghoshal U, Khanduja S, Chaudhury N, Gangwar D, Ghoshal UC. A series of intestinal strongyloidiasis in immunocompetent and immunocompromised host. Trop Gastroenterol 2012; 33:135-9.
7. Newberry AM, Williams DN, Stauffer WM, Boulware DR, Hendel-Paterson BR, Walker PF. Strongyloides hyperinfection presenting as acute respiratory failure and Gram-negative sepsis. Chest 2005; 128:3681-4.

How to cite this article: Karuna T, Khadanga S. A case of masquerading bronchopneumonia. Lung India 2014;31:161-3.

Source of Support: Nil, **Conflict of Interest:** None declared.