

Masquerading Lethal Strongyloidiasis in A Patient with Chronic Kidney Disease: A Case Report

Neetha S. Murthy¹ , Morubagal Raghavendra Rao^{1*} , Ranjitha Shankare Gowda¹ , A. Tejashree¹  and Nikita Shah²

¹Department of Microbiology, JSS Academy of Higher Education and Research, Mysuru, India.

²Post Graduate Microbiology, JSS Medical College, Mysuru, India.

Abstract

***Strongyloides stercoralis* is a nematode typified by a complex replication cycle exhibiting autoinfection, parthenogenesis and a long tenacity of survival in the human host. This infection remains endemic in the humid tropical countries of the world. There exists no gold standard test for the diagnosis of this parasitic infection. However, Inability to clinch the diagnosis can prove fatal among immunosuppressed individuals. We report one such rare case of strongyloidiasis presenting as thrombocytopenic acute gastroenteritis in a patient with chronic kidney disease.**

Keywords: *Strongyloides Stercoralis*, Chronic Kidney Disease, Acute Gastroenteritis, Immunosuppression

*Correspondence: getdrraghurao@yahoo.com

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INTRODUCTION

Strongyloidiasis is a globally prevalent helminthiasis of special concern in tropical & subtropical countries. The causative agent of human strongyloidiasis is the intestinal nematode *Strongyloides stercoralis*. This parasite is notorious for chronic asymptomatic infection which swaps to turn lethal when the host immune response is suppressed. The symptoms associated with manifest strongyloidial parasitosis include; i) Intestinal infective symptoms-intermittent diarrhoea, constipation, fever, abdominal cramps, or ii) hyperinfective symptoms-weight loss, GI haemorrhage, cough, dyspnoea or iii) disseminated disease symptoms-meningitis, skin rash & secondary gram-negative bacteraemia.^{1,2} Coexistent HIV infection is a predominant predisposing factor.³ The other predisposing factors include pan-hypogammaglobulinemia, ongoing steroid therapy, chemotherapy and chronic liver disease.

The estimated global prevalence of strongyloidiasis is around 8.1%.⁴ Hyper-infection syndrome is associated with consequential morbidity & definitive mortality (100%) among untreated cases.⁵ A handful of cases have been reported from the tropical Indian subcontinent.³

We emphasize that misdirected or delayed diagnosis due to closely mirroring gastrointestinal infections is common with this neglected tropical disease. We present a rare case of intestinal strongyloidiasis manifesting with diarrhoea, thrombocytopenia & leukopenia in a stage-5 chronic kidney disease patient on maintenance haemodialysis.

Case report

A 67 year old non diabetic, hypertensive patient with chronic kidney disease stage 5D presented with history of acute gastroenteritis. He complained of multiple episodes of loose stools and a single episode of vomiting and fever spike. On admission patient remained hemodynamically stable, afebrile, with a blood pressure of 130/80 mm Hg and pulse 84 beats/minute. A provisional diagnosis of acute gastroenteritis was made and the treatment was initiated with Injection Ciprofloxacin & Metronidazole.

Routine blood workup revealed a Total

leucocyte count (TLC) of 2040 cells/mm³ & a platelet count of 1.19 lakhs/mm³. Dengue & HIV workup was negative. USG abdomen revealed inflammatory changes consistent with colitis. Eosinophils on differential count was marginally raised at 9.5%. Simple yet precise stool microscopic examination was performed by wet mount examination & iodine mount examination. This clinched the diagnosis by revealing the presence of motile rhabditiform strongyloid larvae with short buccal canal, rhabditoid esophagus & prominent genital primordium (Figure).

Patient was treated with 200 mcg/kg of Ivermectin single dose & 400 mg/day of Albendazole for 3 days. Additionally patient underwent hemodialysis as part of his treatment for existing CKD 5D. The condition of the patient drastically improved by day 3 post initiation of treatment and repeat stool microscopy was found to be negative for strongyloid larvae. TLC increased to 6930 and the platelet counts stabilized at 1.35 lakhs. Patient was deemed fit for discharge on day 4 post treatment inception.

DISCUSSION

S. stercoralis is a soil nematode with a conglomerate biorhythm. This helminth exhibits homogonic development supplementary to a heterogonic life cycle. Although primarily a human bound parasite *S. stercoralis* infection



Figure. Iodine mount showing the presence of rhabditiform *strongyloid larvae*

has been documented in other mammals & primates.⁶ Across the world *S. stercoralis* affects approximately 100-370 million people.⁶ A study by Munishankaar et al, panning between 2013 to 2020 showed a strongyloidial seroprevalence of 33% among South Indian adult population.⁷ Given the background of asymptomatic strongyloidiasis among immunocompetent individuals, this asymptomatic parasitic infestation can turn fatal when the host Th2 response is suppressed in immunocompromised conditions.

CKD progressing to end stage renal disease results in acquired immune deficiency. The associated gut micro-floral imbalance is attributed to diet, metabolic acidosis, frequent antibiotic & oral iron therapy. This gut flora imparity results in Lipopolysaccharide (LPS) tolerance⁸ which opens up the possibility towards occurrence of rare nematode infections. Literature reveals a good number of strongyloidiasis cases reported in renal transplant recipients from India.³ However there is sparse documented evidence of CKD patients presenting with disseminated strongyloidiasis alongside augmented mortality reported from Srilanka,⁹ Thailand,¹⁰ and China.¹¹ There is sheer paucity of intestinal strongyloidiasis data among CKD patients from the tropics possibly due to under diagnosis as well as underreporting.

Simple stool microscopy forms the cornerstone for diagnosis of intestinal strongyloidiasis. Unfortunately, the fecal diagnostic modalities inclusive of the Koga agar plate culture method have a low sensitivity despite adoption of varied concentration techniques. Molecular diagnostics have documented sensitivity of a hooting 83.3%-100%,^{12,13} but are cost ineffective. Serology based diagnostics promise high sensitivity but however at the cost of specificity. The recombinant fecal antigen based ELISA has a sensitivity of about 70% & a specificity of 91%.¹⁴ The accuracy of these tests depends on the population assessed and the larval load in the subject assessed. In subjects with decreased larval loads false negative diagnostic mirages may misdirect clinicians. Therefore, the rear-ground of even marginal eosinophilia in an immunocompromised individual may warrant the lookout for a parasitic infestation. Furthermore, the importance of regular screening among

immunocompromised adults for early diagnosis & thereby reduced mortality/morbidity is hereby stressed.

CONCLUSION

This case report brings out the usefulness of timely diagnostic lifesaving intercession towards forbidding mortality in a rare case of strongyloidiasis presenting as thrombocytopenic acute gastroenteritis in a CKD patient. Additionally, authors would like to stress the importance of regular screening among immunocompromised adults for early diagnosis and effective management of strongyloidiasis.

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None.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHORS' CONTRIBUTION

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

FUNDING

None.

DATA AVAILABILITY

All datasets generated or analyzed during this study are included in the manuscript.

ETHICS STATEMENT

This study was approved by the Institutional Ethics Committee, JSS Medical College, Mysuru, India, with reference number JSSMC/IEC/07112024/06 NCT/2024-25.

INFORMED CONSENT

Written informed consent was obtained from the participant before enrolling in the study.

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