



A CASE SERIES OF STRONGYLOIDES STERCORALIS INFESTATION AMONG PATIENTS ATTENDING TERTIARY CARE CENTRE AT RURAL KANCHEEPURAM DISTRICT

DIVYA .G* AND NITHYA.G

Department of Microbiology, Shri Sathya Sai Medical College & Research Institute, Thiruporur, Sri Balaji Vidyapeeth, Tamil Nadu, India.

ABSTRACT

Strongyloides stercoralis, a neglected nematode is widely prevalent all over the world. Risk factors of the infestations are HIV, immunosuppressive therapy, diabetes, malignancy. Chronic cases will develop hyperinfection or disseminated strongyloidiasis, resulting in high mortality rate upto 87%. One year data of stool microscopic investigations was analyzed for *Strongyloides stercoralis* infestation. Total of 1550 stool samples were analyzed. Out of which 285 (18.3%) samples were positive for ova/cyst or larvae. 11 stool samples showed positive for the presence of *Strongyloides stercoralis* larvae. Most of the cases presented with gastrointestinal symptoms, anaemia, Diabetes mellitus, hypertension, one on corticosteroid and others did not have any high risk symptoms. All are HIV negative. Co infection of helminths was seen in one case. Hence it is very important to suspect even immunocompetent patients with gastrointestinal symptoms in terms of *Strongyloides stercoralis* infestation. This will be helpful in timely diagnosis, treatment and recovery of the patients.

KEYWORDS: *Strongyloides stercoralis*, Immunocompromised, Immunocompetent, Corticosteroids.



DIVYA .G

Department of Microbiology, Shri Sathya Sai Medical College & Research
Institute, Thiruporur, Sri Balaji Vidyapeeth, Tamil Nadu, India

INTRODUCTION

Strongyloides stercoralis, a soil-transmitted nematode, is a neglected tropical helminthiasis. It remains endemic in several parts of the world particularly Southeast Asia, including Latin America and Sub-Saharan Africa as well as temperate areas such as Spain and the Appalachian region of the U.S where hygienic condition and sanitations are limited^{1,2}. It is estimated that about 30-100 million people in endemic areas of the world are infected, especially in tropical and subtropical countries³. This nematode has unique ability to complete its life cycle in humans. It has variable manifestations ranging from asymptomatic to hyper infection, or disseminated infection⁴. Individuals with intact immunity will remain asymptomatic or with mild symptoms like gastrointestinal, cutaneous or pulmonary symptoms with or without fever³. Chronic Strongyloidiasis causes mild clinical manifestation, but in immuno compromised hosts it develops fatal illness to hyper infection or disseminated strongyloidiasis⁵. Despite its frequency, epidemiological data on prevalence and geographical variations are largely lacking⁶. The prevalence of *S. stercoralis* is often underestimated and misdiagnosed as gram negative sepsis or Acute Respiratory Distress Syndrome, as most diagnostic methods used have a low sensitivity for *S.*

Stercoralis^{7,8,9}. Furthermore, in resource poor countries, environmental conditions and poor hygiene behaviour favours transmission. Hence we aimed to study the *Strongyloides stercoralis* infestations, clinical presentations, treatment and the outcome of the patients attending a tertiary care centre situated at rural Chennai.

MATERIALS AND METHODS

One year data (October 2014 – October 2015) of stool microscopic investigations sent to the Central Microbiology laboratory of Shri Sathya Sai Medical College and Research Institute was analyzed for *Strongyloides stercoralis* infestation. Samples received were diagnosed for parasitic infestation by saline and Lugol's iodine mount preparation. All the samples were examined thoroughly before giving negative report for ova and cyst. Patient's records were screened to know the clinical presentation, treatment given and the recovery. Total of 1550 stool samples were analyzed for a period one year to detect ova, cyst, trophozoites and larvae. Out of which 285 (18.3%) samples were positive for ova/cyst or larvae. 11 stool samples showed positive for the presence of *Strongyloides stercoralis* larvae (**Figure: 1**). Prevalence rate was found to be 0.7%.



Figure 1
Strongyloides stercoralis larvae

Case series

Case 1

55 year old Male, chronic alcoholic, came with complaint of dribbling of urine, incomplete micturition for 2 weeks and increased frequency of micturition, nocturia, incomplete evacuation and straining. No history of vomiting or constipation. He has been admitted one month before with similar complaints in the same hospital and undergone conservative treatment for renal calculi (L). He was anaemic, underwent 1 unit of O positive packed cell transfusion. He was Non diabetic or hypertensive. Stool sample microscopy was positive for *Strongyloides* larvae. Patient was treated with T. Albendazole 400mg OD for five days followed by T.Ivermectin 12mg and improved.

Case 2

29 year old male who was admitted with complaint of loose stools for 2 days and had a similar episode before 1 week for 3 days, admitted and treated outside for the same. He was diagnosed with Acute diarrhoeal disease. No complaint of vomiting, cough and denies the history of having food outside like hotel, restaurant. Stool sample was sent to the microbiology laboratory revealed the presence of *Strongyloides* larvae. His serum potassium level was found to be 3.3mEq/l, Urea was 113g/dl, and He was treated with IV Ciprofloxacin 200mg, IV Metronidazole 500mg, T. Loperamide 2mg. Patient could not be followed up.

Case 3

85 year old female presented with lower abdominal pain, loose stools, vomiting and fever for 1 year.

Hemorrhoidectomy was done 2 years back. She is Hypertensive, diabetic, had an acute Myocardial infarction and under medications regularly for all the three illnesses. Her personal history showed altered bowel habit. She was initially treated with IV Ciprofloxacin 200mg, T. Atorvastatin 10mg HS, T. Amlong 5mg, T.Nitroglycerine 2.5mg, T.Metoprolol 25mg. On the day 2, she developed loose stool with blood, tenderness in epigastrium and hypochondrium. She also had perianal pruritus and no complaint of larvae currens. She was then treated with T.Ivermectin 12mg for 2 days. Patient responded well.

Case 4

3 year old girl admitted with a complaint of fever, snoring, cough with expectoration, vomiting, abdominal pain, and headache for two days. She was found to have Adenotonsillitis. She had intermittent diarrhoea since a month, also developed fever (102°C). Stool microscopy showed the presence of Strongyloides larvae and treated with T. Albendazole 400mg and T. Ivermectin 12mg. Girl responded well.

Case 5

8 year old child presented with fever, lower abdominal pain for one week. She was diagnosed with iron deficiency anaemia along with worm infestation and she was on Iron Folic Acid. Her urine culture was negative but she developed fever, lethargy. Once diagnosed with Strongyloides larvae, the child was treated with T.Ivermectin 12mg and responded well.

Case 6

59 year old male, chronic alcoholic came with complaint of breathlessness, chest pain, and cough for 5 days; he was a known case of Hypertension and not on regular treatment, non diabetic. Had a past history of COPD and was on steroid. Stool microscopy was positive for larvae. He was given T.Albendazole 400mg and responded well.

Case 7

49 year old male, chronic alcoholic, came with complaint of abdominal pain for 3 days, loose stool with blood for one week, he is a known diabetic and hypertensive and on treatment for the same (Inj.Human Actrapid 18u-o-10u, T.Rosuvastatin 5mg OD, T.Telma H Once daily). He was found to be asthmatic & on Metered Dose Inhaler with steroid (fluticasone, ipratropium bromide, levosalbutamol). On stool examination he was found to be positive for strongyloides larvae, and treated with Ivermectin and Albendazole. Patient could not be followed up.

Case 8

60 year old male was admitted with complaint of fever, giddiness, nausea, vomiting, abdominal pain, cough, blood in stool, Known hypertensive & on T.Amlong 5mg (1-0-0). Patient had positive symptoms for alcoholic liver disease like flapping tremors, right hypochondriac tenderness, pallor, free fluid + in USG abdomen, for which patient was treated with T.Udiliv 300mg 1-0-

1,Inj.Thiamine 100mg IV infusion in normal saline. Patient discharged on request.

Case 9

30 year old male, alcoholic and smoker, came with complaint of giddiness, head ache for 4 days, swelling of both legs, vomiting, abdominal pain on and off, blood stained stool with burning sensation and fever. He was found to be anaemic, diagnosed with coinfection of hook worm infestation. Treated with T. Albendazole 400mg and T.Ivermectin 12mg. He recovered well.

Case 10

40 year old male admitted with complaint of blood in stools, vomiting (red-black vomitus), and giddiness. Similar history was present before 6yrs, known alcoholic and smoker. He was non diabetic or hypertensive. On admission patient was hypotensive 70/60mmhg, pulse rate-110/min. His urea was elevated to 75g/dl. On Ryles Tube aspiration 70ml of altered blood was aspirated. 1 unit B Positive whole blood was transfused. Pt treated with Inj.Ethamsylate 250mg IV, Inj.Adrenochrome IM, Inj.Pan 40mg IV, Inj.Emeset 4mg IV. Patient discharged on request.

Case 11

52 year old male, chronic alcoholic and smoker, who came with complaint of chest pain since 1 year, breathlessness, swelling of both legs. Patient was found to be anaemic and developed loose stool on 6th day of admission. ORS was given. Treated with Tablet.Lasilactone 40 mg half a tablet once daily in the morning, T.Sorbitrate 5mg, T.Atorvastatin 10mg HS, patient discharged on request.

DISCUSSION

Strongyloidiasis is commonly reported in HIV and other immunocompromised individuals resulting in asymptomatic chronic disease of gut and remain undetected for decades. *S. stercoralis* is widely distributed throughout the tropical and sub-tropical regions of the world, affecting 30 million people in 70 countries.¹⁰ Infestation is commonly overlooked, especially in endemic resource poor countries, as the most suitable diagnostic methods for *S. stercoralis* are not used in most epidemiological studies of soil-transmitted helminths. Despite the high endemicity, specific information of *S. stercoralis* in Southeast Asia is often lacking.¹¹ Rate of Strongyloides manifestation remain variable. A study from Tirupathi¹² and Bhuvaneshwar¹³ showed prevalence rate of 1% of strongyloides infestation. In our study of *S. stercoralis* prevalence rate was found to be 0.7%. Most of the cases in our study are male patients of adult to elderly age group and found to be alcoholic and smoker. Similar association was noted in previous studies.^{13,14} High infection rate in males can be attributed due to their outdoor livelihood, field work and open air defecation as they are from rural setting that gives high probability of exposure to Strongyloides infective stage. Second most

predominant group was children below five years of age, whose immune status; less hygienic sanitation may be predisposing factor for the infection. In a community based study conducted in Assam among 198 individuals, 17 (8.5%) individuals were positive for Strongyloides, of which 10 (58.8%) were reported to be asymptomatic,¹⁵ in another study describing five patients with strongyloidiasis in an endemic area, all presented with gastrointestinal symptoms.¹⁶ In our study almost all the patients presented with gastrointestinal symptoms like acute diarrhoea, chronic diarrhoea, nausea, vomiting, and lower abdominal pain. Respiratory symptoms such as cough, chest pain, wheezing, tonsillitis and asthma. Two of the above patients were diabetic and four were hypertensive and on treatment. Corticosteroid treatment which is the major cause of hyperinfection was found in one of the asthmatic patient with severe lower abdominal pain, blood stained loose stool. In addition to that the patient was found to be an alcoholic, diabetic and hypertensive which are added associations for the infection. It has been reported in USA that primary care physicians who were unaware of strongyloidiasis prevalence, treated patients presenting with wheezing with corticosteroids for "asthma" with subsequent development of hyperinfection but clinicians familiar with immigrant health or travel medicine evaluated their patients for strongyloidiasis, with appropriate treatment, and confirmatory follow-up evaluation.¹⁷ As our hospital is situated among the rural population multiple helminthic infestations were well suspected where sanitation and proper hygienic practice not maintained well. One of our cases was found to have coinfection of strongyloides and hookworm infestation. Hence proper awareness and healthcare practices regarding open air defecation and sanitation have to be carried out among this population. None of our patients were HIV positive. The commonest risk factors were Diabetes mellitus, Hypertension, Anaemia, corticosteroids and age. Hence it has become necessary for the clinicians to think in terms of

strongyloides not only in case of immunocompromised individuals but also in case of immunocompetent. Eventual diagnosis of Strongyloidiasis was considered by the detection of larvae. But due to low parasitic load and irregular larval output there was failure to spot 70% of cases,¹⁸ but in our study all the 11 cases showed the presence of larvae in first stool microscopy. Similar finding was reported by Kumudini *et al.*¹³ Eosinophilia, clinical features and positive serological tests are said to be indicators of strongyloidiasis. But the clinical features are nonspecific; eosinophilia is not evident in all cases and serological tests are not available in most of the centers in India.^{18,19} Hence, eosinophilia cannot be considered a reliable screening parameter for Strongyloides infestation even in immunocompetent patients.

CONCLUSION

We conclude that *Strongyloides stercoralis* infestation which is increasingly reported among HIV and other immunocompromised individuals can also occur in immunocompetent host. Hence it is necessary to diagnose these infections in immunocompetent individuals presenting with gastrointestinal symptoms along with the absence of eosinophilia. Addition to which hyperinfection syndrome which is a major cause of mortality due to Strongyloidiasis all over the world along with corticosteroid intake has to be monitored on timely basis; this will be helpful for treatment and early recovery of patients.

ACKNOWLEDGEMENT

Authors thank the Management and Department of Microbiology of Shri Sathya Sai Medical College and Research Institute for their encouragement and support given to carry out the study.

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