



RESEARCH ARTICLE

STRONGYLOIDES STERCORALIS INFECTION IN AN IMMUNOCOMPETENT ADULT: A DIAGNOSTIC DILEMMA IN HELMINTHOLOGY

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ARTICLE INFO

Article History:

Received 18th November, 2016
Received in revised form
24th December, 2016
Accepted 02nd January, 2017
Published online 28th February, 2017

Key words:

Strongyloides stercoralis,
Hyperinfection,
Immunocompetent.

ABSTRACT

Strongyloides stercoralis is an intestinal nematode of humans. It is prevalent throughout the tropical, subtropical and temperate regions. It is endemic in hot and humid climates as well as resource poor countries with inadequate sanitary conditions. The rise of international travel and immigration has a positive impact in strongyloidiasis. Man is infected by filariform larvae of Strongyloides stercoralis. Due to its unique auto infection life cycle, Strongyloides may lead to chronic infections remaining undetected for decades. Strongyloidiasis is most often asymptomatic but it has a wide range of clinical presentations.

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Citation: Vinitha SAMARTHA, Shreya HEGDE and Thoppil Reba PHILIPOSE. 2017. "Strongyloides stercoralis infection in an Immunocompetent adult: A diagnostic dilemma in Helminthology", International Journal of Current Research, 9, (02), 46793-46794.

INTRODUCTION

Strongyloidiasis affects 30 to 100 million people worldwide but its prevalence is underestimated. The two most severe forms of strongyloidiasis are hyper infection and disseminated syndromes. These occur most often in patients with impaired cell mediated immunity. Infection usually results in asymptomatic chronic disease of the gut, which can remain undetected for decades. Strongyloidiasis is difficult to diagnose because the parasite load is low and the larval output is irregular (Afzal, 2001). Hence histopathologic findings of chronic duodenitis with adult worms, eggs or larval stages, associated with eosinophilia would help to clinch the diagnosis.

Case Report

A 56 year old Indian male patient presented with complaints of nausea, vomiting, loss of appetite and abdominal pain since 3 weeks. The patient looked ill, emaciated and depressed with complaints of disturbed sleep due to the abdominal pain. His vital signs were stable. The physical examination was normal except for epigastric tenderness. CT scan showed Grade – 1 fatty changes of the liver, small right renal calculi and minimal right sided pleural effusion.

Peripheral blood smear showed eosinophilia with a percentage of 9.8%. Other laboratory investigations revealed elevated liver enzymes (SGOT-238U/l, SGPT -205U/l). However the total protein and albumin were 4.5g/dl and 2.3g/dl respectively, which was low. The serum sodium levels constantly showed low levels, their values being 120mmol/l and 123mmol/l. The other physical and laboratory parameters were normal. The duodenal biopsy showed surface erosions and edema of the duodenal mucosa (Figure 1). Lamina propria showed dense infiltration by lymphocytes and plasma cells with occasional eosinophils (Figure 2). Mucosa showed numerous cross sections of adult worms, eggs and larvae of Strongyloides stercoralis (Figure 3).

DISCUSSION

Strongyloides stercoralis is an intestinal helminth that infects humans through contact with soil containing the larvae (Concha, 2005). Infections are acquired when larvae penetrate the skin and migrate to the duodenum and upper jejunum to mature. An internal autoinfective cycle allows the parasite to reside within a human for years. Clinical syndromes of Strongyloides Stercoralis vary widely. Chronic infection with Strongyloides Stercoralis is most often asymptomatic in over 60% of cases and only indicated by a raised blood eosinophil count (Kelsner, 2004). Hyperinfection describes a syndrome of accelerated autoinfection which results from immunosuppression. Detection of an increased number of

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larvae in stool, sputum and/or tissue is a hallmark of hyperinfection. Gastrointestinal and pulmonary symptoms are common but nonspecific.

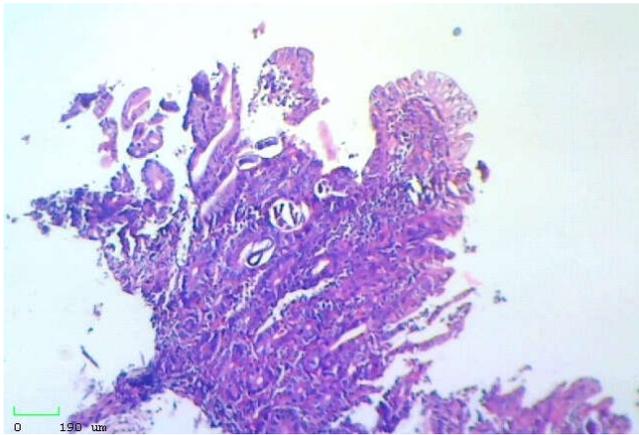


Figure 1. Duodenal biopsy showed surface erosions and edema of the duodenal mucosa

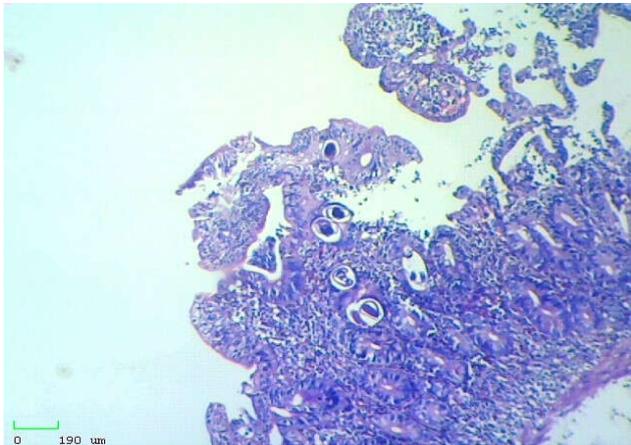


Figure 2. Lamina propria showed dense infiltration by lymphocytes and plasma cells with occasional eosinophils

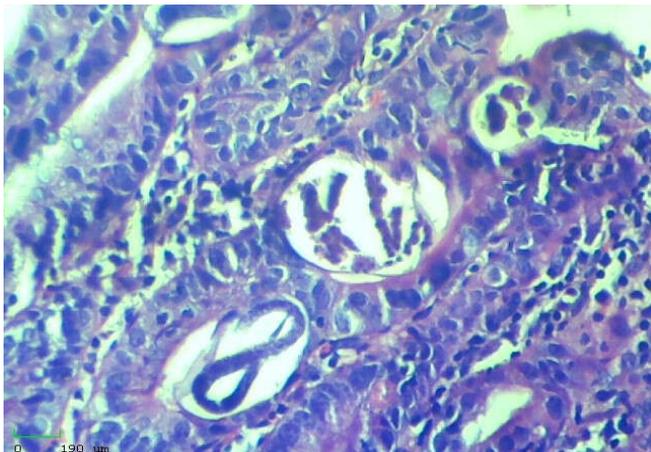


Figure 3. Mucosa showed numerous cross sections of adult worms, eggs and larvae of *Strongyloides stercoralis*

The symptoms include abdominal pain, diarrhea, vomiting, adynamic ileus, small bowel obstruction and protein – losing enteropathy, as well as, pneumonia (Maguire, 2006). Disseminated infection is the migration of larvae to organs beyond the range of the autoinfective cycle (lungs and gastrointestinal tract) and is often complicated by Gram – negative sepsis. Such organs include the skin, liver, central nervous system as well as virtually every organ in the human body (Kelser, 2004). As *Strongyloides Stercoralis* colonizes in

the duodenum where the larvae mature, endoscopic evaluation has been recognized as an important tool for diagnosing strongyloidiasis. In general, the endoscopic findings of strongyloidiasis are not very specific. The stomach may show thickened folds and mucosal erosions. In the duodenum, the usual findings are edema, brown discoloration of the mucosa, erythematous spots, subepithelial hemorrhages and megaduodenum. The histopathology shows adult worms, eggs and larvae in the epithelium of the crypts with acute or chronic inflammation in the mucosa with numerous eosinophils (Maguire, 2006). Damage of the surface epithelium with hyperplastic reactive changes are noted in most of the cases (Yaldiz, 2009 and Rivasi, 2006). Eosinophilia is common in Strongyloidiasis ranging from 25-35% in acute cases and 6-8% in chronic cases. Occasionally, eosinophil count may be low in some immunosuppressed conditions such as corticosteroid administration. Absence of eosinophilia indicates a poor prognosis (Kim, 2003).

Conclusion

Strongyloidiasis is a curable disease. Unless severely infected, the clinical symptoms are generally not severe and frequently nonspecific. The infection can be overlooked by the patient and physician (Yaldiz, 2009). Furthermore, immune suppression in patients with chronic strongyloidiasis predisposes to a high risk of developing hyperinfection syndrome, a life threatening complication leading to systemic sepsis and multiorgan failure (Gokhale, 2010). Early diagnosis and appropriate therapy will reduce mortality and morbidity (Yaldiz, 2009).

Acknowledgement

The authors have no conflict of interest to declare. This study was not supported by any funding agency.

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