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### RESEARCH ARTICLE

#### COLONIC STRONGYLOIDES STERCORALIS INFECTION

Rami Khaled Abou El Foul<sup>1</sup>, Mohamed Gomah Hamed Alaqqad<sup>2</sup>, Mohamed Mahmoud Ibrahim Mohamed<sup>1</sup>  
and Manal Syed Rezzek<sup>3</sup>

1. Internal Medicine Unit/Gastroenterology, Hatta Hospital, Dubai, United Arab Emirates.
2. General Surgery department, Hatta Hospital, Dubai, United Arab Emirates.
3. Internal Medicine Unit, Hatta Hospital, Dubai, United Arab Emirates.

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#### Abstract

Strongyloides stercoralis is a nematode infection which predominantly involves the small bowel. Spillover infection to the colon does occur, but is uncommon and is usually associated with an immunocompromised host. Individuals with infection confined to the intestinal tract are often asymptomatic but may have abdominal pain, weight loss, diarrhea, and other nonspecific complaints. In such cases the only sign of infection is an increased peripheral blood eosinophil count but should not be relied upon. Strongyloidiasis is endemic in rural areas of tropical and subtropical regions; in these areas, the overall regional prevalence may exceed 25 percent. In addition, strongyloidiasis occurs sporadically in temperate areas such as North America, southern Europe, Japan, and Australia. An estimated 30–100 million people are infected worldwide; precise data on prevalence are unknown in endemic countries (WHO)(1,2). Strongyloidiasis is transmitted through direct penetration of human skin by infective larvae when in contact with soil; walking barefoot is therefore a major risk factor for acquiring the infection. Strongyloides spp. larvae penetrate the human host and reach the intestine where they mature into adults and produce eggs; the eggs hatch in the gut lumen and yield larvae that are evacuated in faeces. The peculiarity of this worm is that some larvae are not excreted but reinvade the intestine or perianal skin to perpetuate the infection (“autoinfection cycle”)(2) The larvae mature into adult worms that burrow into the mucosa of the duodenum and jejunum. Adult worms may live for up to five years. In the apparent absence of male adults, pathogenic adult females produce eggs, from which noninfectious larvae (rhabditiform larvae) develop within the lumen of the gastrointestinal (GI) tract. The rhabditiform larvae (picture 1) are generally passed in the stool. The duration of the cycle from dermal penetration of filariform larvae to appearance of rhabditiform larvae in the stool is approximately three to four weeks. (2, 3).

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**Corresponding Author:- Rami Khaled Abou El Foul**

Address:- Internal Medicine Unit/Gastroenterology, Hatta Hospital, Dubai, United Arab Emirates.

**Introduction:-**

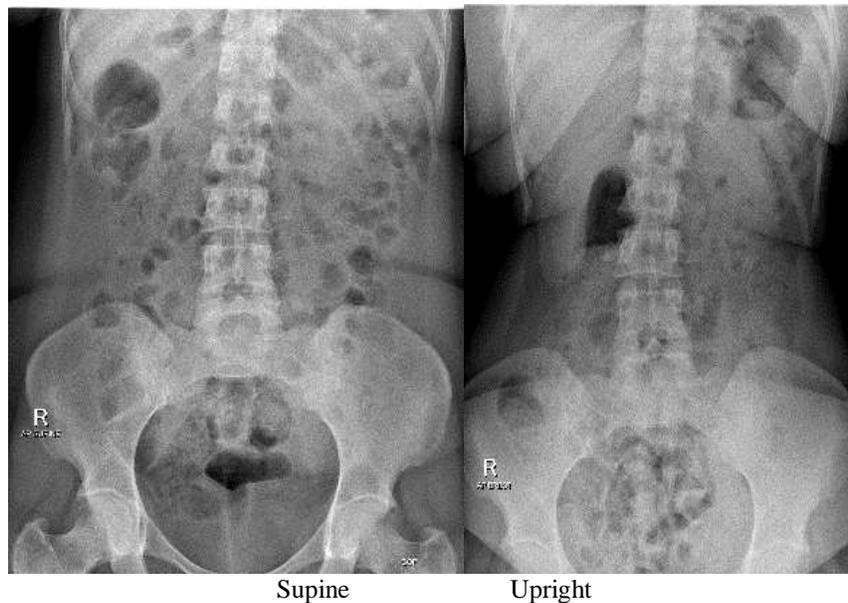
37 years old female patient was admitted under surgical team in Hatta Hospital with complains of nausea, vomiting, abdominal pain and constipation which started 2 weeks prior to admission. Physical examination revealed Mild tenderness on left side of the abdomen. She had past surgical history of Hysterectomy on 30/04/2019 due to Menorrhagia

Her blood investigations showed mild eosinophilia and iron deficiency anemia. CRP: 8 mg/dl, Lipase: 19.70 U/L, Procalcitonin(PCT): 0.03 ng/mg, Amylase: 62 U/L. Stool sample was ordered from Gastroenterology clinic but patient did not gave the sample

HIV 1 & 2 Ag & Ab:non-reactive, Hepatitis C Antibodies: non-reactive, Hepatitis B Surface Antigen: non-reactive

Abdominal X ray revealed markedly loaded colonic segments.

Strongyloides IgG Antibody: Negative (was done once post treatment with Albendazole)



Her ABD USS showed Mild hepatomegaly with bright hepatic parenchyma likely representing fatty hepatomegaly, Suspected spastic colon. A CT scan of the abdomen and pelvis with contrast was unremarkable. The patient was discharged home and given appointment to Gastroenterology clinic. Gastroscopy and colonoscopy was advised. Gastroscopy showed multiple erythematous nodularities in the body of the stomach, Biopsies showed Moderate to marked chronic active gastritis and Giemsa special stain showed numerous H. pylori organisms (3+).



Colonoscopy showed multiple worms attached to the colon in multiple sites. (stool aspirate was sent for microbiology which showed STRONGYLOIDES STERCORALIS LARVAE)



### Discussion:-

Strongyloidiasis is a chronic parasitic infection of humans caused by *Strongyloides stercoralis*. Transmission occurs mainly in tropical and subtropical regions but also in countries with temperate climates. An estimated 30–100 million people are infected worldwide; precise data on prevalence are unknown in endemic countries. Infection is acquired through direct contact with contaminated soil during agricultural, contact with human waste or sewage, domestic and recreational activities. Like other soil-transmitted helminthiases, the risk of infection is associated with hygiene, making children especially vulnerable to infection. Strongyloidiasis is frequently underdiagnosed because many cases are asymptomatic; moreover, diagnostic methods lack sensitivity. Without appropriate therapy, the infection does not resolve and may persist for life. Infection may be severe and even life-threatening in cases of immunodeficiency. No public health strategies for controlling the disease are active at the global level.

Treatment for strongyloidiasis is recommended for all persons found to be infected, whether symptomatic or not, due to the risk of developing hyperinfection syndrome and/or disseminated strongyloidiasis.

Acute and chronic strongyloidiasis (2, 7)

First line therapy Ivermectin, in a single dose, 200 µg/kg orally for 1—2 days

#### Relative contraindications include the following:

1. Confirmed or suspected concomitant *Loa loa* infection
2. Persons weighing less than 15kg
3. Pregnant or lactating women

Oral ivermectin is available for human use in the United States.

Alternative

Albendazole, 400 mg orally two times a day for 7 days.

#### Relative contraindications:

1. Hypersensitivity to benzimidazole compounds or any component of product
2. Use should be avoided in the 1st trimester of pregnancy

Oral albendazole is available for human use in the United States.

In patients with positive stool examination for *Strongyloides* and persistent symptoms, follow-up stool exams should be performed 2—4 weeks after treatment to confirm clearance of infection. If recrudescence of larvae is observed, retreatment is indicated.

Hyperinfection syndrome/Disseminated strongyloidiasis

If possible, immunosuppressive therapy should be stopped or reduced, and:

Ivermectin, 200 µg/kg per day orally until stool and/or sputum exams are negative for 2 weeks.

For patients unable to tolerate oral therapy, such as those with ileus, obstruction, or known or suspected malabsorption, published case reports have demonstrated efficacy with rectal administration.

If oral and/or rectal administrations are not possible, there have been instances where Investigational New Drug (IND) exemptions for the veterinary subcutaneous formulation of ivermectin have been granted by the FDA.

Considered for testing prior to being initiated on any immunosuppressive therapy, particularly corticosteroids.

**Screening:**

**Physicians should be particularly diligent to consider Strongyloides in patients:**

Who are on or about to begin corticosteroid therapy or other immunosuppressants

Known to have HTLV-1 infection

With hematologic malignancies including leukemias and lymphomas

Who have had or are being considered for organ transplantation

With persistent peripheral or unexplained eosinophilia

With recent or remote travel histories to endemic areas.

Of note, though persons with HIV/AIDS can have disseminated strongyloidiasis or hyperinfection syndrome, observational studies have not shown an increased risk in this population.

**Prevention & Control(5,6):**

The best way to prevent Strongyloides infection is to wear shoes when you are walking on soil, and to avoid contact with fecal matter or sewage. Proper sewage disposal and fecal management are keys to prevention.

Furthermore, if you believe that you may be infected, the best way to prevent severe disease is to be tested and, if found to be positive for disease, treated.

**You should discuss testing with your doctor if you are:**

Taking steroids or other immunosuppressive therapies

About to start taking steroids or other immunosuppressive therapies

A veteran who served in the South Pacific or Southeast Asia

Infected with Human T-cell Lymphotropic Virus-1 (HTLV-1)

Diagnosed with cancer

Going to donate or receive organ transplants

**Conclusion:-**

Stool microscopy should still be routinely performed, as it is the gold standard for diagnosis. It can take 3-4 weeks for larvae to appear in the stool after dermal penetration (we did Stool analysis twice in this patient on 16/10/2019 and 04/12/2019 post treatment with Albendazole given for 7 days and showed no more Strongyloides infection)

Serological testing, which consists of an enzyme linked immunosorbent assay to detect IgG to a filariform larval antigen, is generally considered to be a superior investigation(5). Commercially available assays have a sensitivity between 83% and 89% and a specificity of 97.2%.<sup>15</sup> In the presence of other helminthic infections there is a risk of a false positive result owing to cross reactivity. This is particularly true for filariasis, where up to 60% of patients may have false positive *S. stercoralis* serology

Repeat serological testing after treatment seems to be the best way to test for cure. If the antibody titer has decreased at 6-12 months after treatment this is indicative of eradication of the parasite.<sup>37</sup> It has been suggested that a post-treatment to pre-treatment titre ratio of <0.6 is a good indicator of treatment success(2,4, 7)

Unlike most other intestinal parasite infections, strongyloidiasis may be lifelong problem.

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