

Severe *Strongyloides stercoralis* Infection in Ascitic Fluid

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Abstract

The strongyloidiasis is an infection whose responsible agents are *Strongyloides stercoralis* and *S. fuelleborni*. These nematodes have an intestinal location; the main risk factor is to be barefoot in places contaminated with filariform larvae. The study presents a male 23-year-old resident of San Juan de Lurigancho, with 14 months of illness with signs of bloating, nausea, vomiting and was afebrile, also indicates that 28 days before he had epigastric pain irradiated to the back. On physical examination a distended abdomen was found, soft painful tympanic tenderness, the abdominal ultrasonography showed dilated bowel loops, bloat, with abundant presence of free fluid in the abdominal cavity (ascites) and parasitological examinations observed, rhabditoides larvae L1 and L2 and filariform L3 of *Strongyloides stercoralis*. He received Ivermectin, obtaining the patient's recovery.

Keywords: *Strongyloides stercoralis*; Infection; Ascitic Fluid (Source: MeSH NLM)

Introduction

Strongyloidiasis is a parasitosis produced by the female nematode *Strongyloides stercoralis*, has intestinal location mainly affecting the human that acts as a reservoir, with faeces being the main source of infection.

The larvae were first observed in diarrhoeal samples by Louis Normand 148 years ago (1867) and did not have a name. It was considered that they were 2 species so later the parasite was named *Anguillula stercoralis* (Bavay 1876) and Intestinal Anguillula (Bavay 1877). Likewise, Grassi in 1879; Proncito in 1880 and Leuckart in 1882, demonstrated that these two species were distinct phases of the same heterogenic life cycle with a parasitic generation and a free-living generation [1].

S. fuelleborni mainly affects primates, however, it can enter the human organism by the filariform larvae (infective form) accidentally, but will not complete its biological cycle, being responsible for more than 50% of human strongyloidiasis [2] also this species affects animals, such as dogs and cats.

The clinical picture of *Strongyloides* infection may consist of simple parasitosis, self-infection, hyperinfection, and disseminated infection. The clinic includes dermatological, gastroenterological and pulmonary manifestations. *S. stercoralis* enters the human body through the dermal pathway, passes into the bloodstream reaching the lungs, ascends through the trachea to enter the small intestine. It can oc-

cur asymptomatic and chronic and can be maintained for up to 65 years [3] however, there are also cases with high parasitic load with invasion of the intestinal submucosa that cause granulomas with inflammation and ulcerations in the muscle layers, injuries occur most frequently in the duodenum and yeyuno. This parasite is characterized by having a parthenogenetic homogenic alternation inside the host and heterogenic in those of free life (environment) [4], so it may present a hyperinfection or disseminated infection, which spreads throughout the small intestine and large intestine, there is also invasion to other organs, secretions and fluids even in the ascitic fluid causing severe pictures and even deadly cases [5].

Strongyloides (Grassi 1879)

It is a geohelminth, endemic to tropics, subtropics and climates temperate by humidity and temperature. It is widely distributed in Southeast Asia, Africa, southeastern United States, Latin America; varying from region to region.

The female *Strongyloides stercoralis* measures 2 mm in length by 40 to 50µm in diameter, It has a cylindrical muscular esophagus that occupies the anterior third, continues with the intestine and ends in the anal hole, has 2 ovaries, anterior and posterior, a full uterus that can contain 50 to 55 eggs, being the biotic potential of the female of 40 to 50 eggs per day, adults and males are free-living.

The eggs are transparent ovals of 55 x 32µm similar to *Ancylostoma/Necator*, with a large number of blastomeres; in the faecal matter it is possible to observe them only in cases of severe diarrhea.

The rhabditoid larva (L1 and L2) measures from 200 to 400 x 15 µm, has the blunt anterior end with short foyer, the esophagus has 3 parts: body, its mo with nervous ring and muscle bulb; the intestine ends in the anus, the large genital primordium is located in the back half.

The filar form larva (L3) of 400 to 700µm x 25µm, has a straight esophagus, may or may not have membrane, no oral cavity is observed, a stylus is present at the front, long esophagus at the back end with sheath, the tail is forked or ends in a fork.

Classic Case

A 23-year-old male from Chachapoyas, Amazonas department (last trip was eight months ago) currently resides in San Juan de Lurigancho. For fourteen months, she has presented burning abdominal pain in the epigastrium, as well as cramps in the mesogastrium associated with sporadic presentation of nausea and vomiting that intensified, she lost weight considerably. The following months continued the discomfort associated with abdominal bloating, nausea, severe vomiting, colic-like pain, no diarrhea, lower limb edema, and meteorism.

The patient reported that for more than a year he suffered from the clinical picture of acute gastritis, associated with severe abdominal pain, vomiting repeatedly, with relapses, but 28 days ago, the pain of the epigastrium radiated towards the back, was constant and developed afebrile. Vomiting, epigastric pain and other symptoms were intensifying, which is why he was admitted to the hospital as an emergency.

The medical history review was performed, finding decreased appetite, increased thirst, disturbed sleep; bowel movements and decreased weight. The clinical evaluation was carried out and it was requested to perform blood biochemistry (hemogram), auxiliary imaging tests (ultrasound) and laboratory evaluations with the ruling out of the human immunodeficiency virus (HIV), the ruling out of the bacillus tuberculosis (TB) and parasitological tests.

The blood count indicates a leukocyte count of 5400/mm³, platelets 90000/mm³, hemoglobin 6.8 g/dl, hematocrit 22%, leukocyte formula: abastonated 1, segmented 44, eosinophils and basophils 0, monocytes 17 and lymphocytes 38. The coagulation profile was had 3', coagulation time 8', prothrombin time TP 29.9'', time of partial thromboplastin TPP 39'', fibrinogen 190 mg/dl and thrombin time 19''.

In the abdominal ultrasound report, there is evidence of a dilation of the intestinal loops in the abdomen and increased intestinal meteorism, the presence of a large amount of fluid in the interasas space (ascites), subhepatic, Morrison space and adjacent to the anterior abdominal wall and the possibility of Infectious picture not ruling out the probability of a specific intestinal process.

Laboratory tests of ascitic fluid were requested after ultrasound by cytochemical examination and parasitological examination. The cytochemical indicated slightly cloudy-looking liquid, with the presence of leukocytes $250/\text{mm}^3$, blood cells greater than $100/\text{mm}^3$, glucose 98 g/dl and proteins 3.8 g/dl.

The parasitological examination of ascitic fluid presented *S. stercoralis* in both the larval forms rhabditoid L1 (Figure 1-3) and the filariform larva L3 (Figure 4-7); for the identification of the species the direct method with physiological serum and lugol solution was used; the spontaneous tube sedimentation technique (TSET). The detection of evolutionary stages (L1L3) and their differentiation was performed through the use of vital dyes. The sample observed the rhabditoid and filariform of *Strongyloides stercoralis* (larvae) ++, 6-10 per microscopic field (6 - 10/cm); the size of the larvae fluctuated between 100 to 112.57m and 272 - 353.5 mm respectively [4-10].



Figure 1: *Strongyloides stercoralis* (L1), short mouth cavity, genital primordium (200x).



Figure 2: *Strongyloides stercoralis* (L2), extreme anterior (200x).

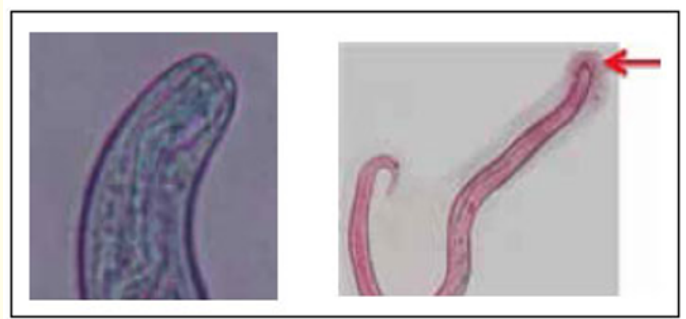


Figure 3: *Strongyloides stercoralis* (L2), the arrow shows the anus (400x).



Figure 4: *Strongyloides stercoralis* (L3), small intestine as a double line.

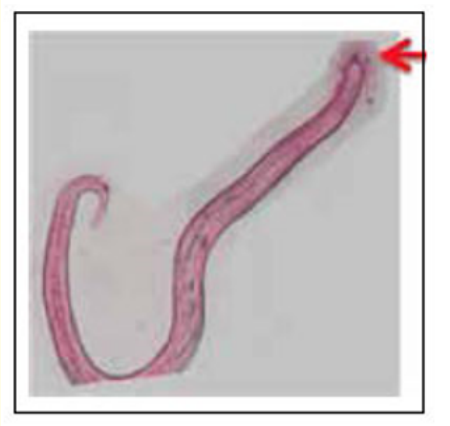


Figure 5: *Strongyloides stercoralis* (L3), prominent oral stylet (200x).

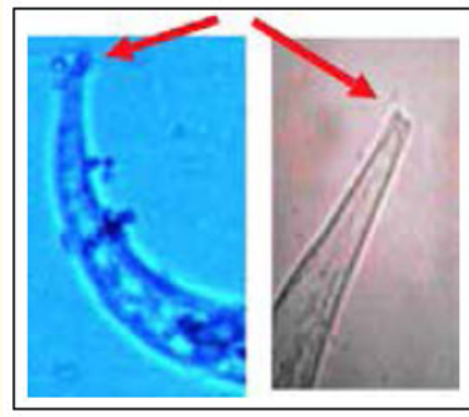


Figure 6: *Strongyloides stercoralis* (L3), cola bifurcada (400x).

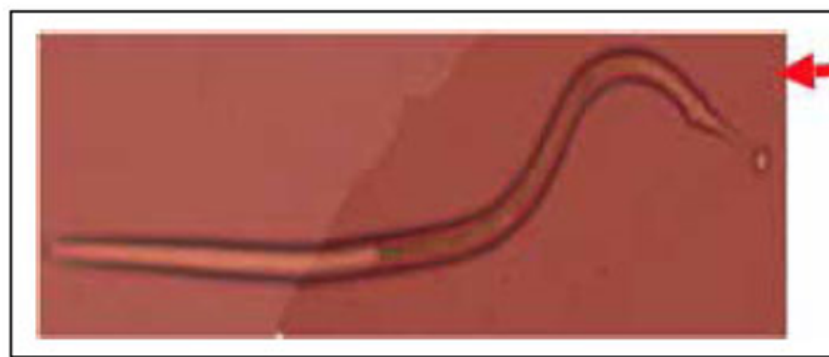


Figure 7: *Strongyloides stercoralis* (L3), sharpened and very rigid posterior end and the anterior end is projected. 100x.

For laboratory tests for the discard of human immunodeficiency virus (HIV) and for the discard of Tuberculous bacillus (TB) blood and sputum samples were taken respectively, where the results were negative.

Discussion and Conclusion

The clinical manifestations that cause strongyloides are variable, depending on the degree of infection or host immunity, mild infections are usually asymptomatic and occur in 30 to 50% of cases, being able to remove the larvae intermittently giving a false negative result [2,6,11]. Patients almost always complain of abdominal pain in the epigastrium, the most common symptoms being diarrhea at 55%, abdominal pain 32%. In individuals with heavy parasitic burdens, clinical manifestations can range from mild to severe, even with potentially fatal spreading.

In symptomatic cases, dermatological problems occur, gastrointestinal and pulmonary, having asthma-like symptoms [3,9,13] is therefore that differential diagnosis should be considered in cases with asmatiformes in the detection of *S. stercoralis*, as well as in cases of

chronic digestive diseases in immigrants and travelers; may also be associated with nephritic syndrome as in the case of 2-year-olds diagnosed with intestinal obstruction diagnosis, associated with diarrhoea, fever and dry cough [9,10]. Other patients have skin migrant larva or larva currens, with the presence of a serpentine salpullido, with itching, caused by the 3-filariform larvae L3; this rash should be investigated in the buttocks, chest and limbs [12].

Strongyloidiasis is endemic in rural areas of tropical and subtropical climate countries, affects 30 to 100 million people where they favor the right weather conditions and temperature, which allow the development and survival of *S. stercoralis*; Brazil is known to have an infection of 15 - 82%, Colombia from 5 to 10%, Central African Republic 48% [3-5] in Peru from 14 to 19% [6]. *S. stercoralis* were observed in 19.5% in patients in Puerto Maldonado by direct parasitological examination [7,8].

Geohelminth infections are preferably intestinal, according to the agent, location, parasitic intensity, and immunity of the affected host, can be made extra intestinal by the severity of the infection and the invasion of other organs and systems such as this case.

The parasite was found in abdominal ascitic fluid. Disseminated strongyloidiasis is of enormous importance in immunocompromised patients, whose results in a fatal outcome [14].

This is a case of hyperinfection, referring to the overgrowth of parasites and the maturation of rhabditoid larvae to filariform, which can occur by the time and place where it performs its life cycle. It is usually associated with some type of immunodeficiency, although in this case the patient was negative for HIV [15].

The gastroenterological findings usually found in immunocompetent patients are almost the same presented in this case as: abdominal pain in the epigastrium that simulates an acid-peptic disease, colic-type pains in the lower hemiabdomen, intermittent diarrhea and feeling bloating. You can even simulate cholecystitis. The only thing that differs is that in this case the patient does not have diarrhoea [16].

The patient begins his symptoms with bloating, burning, writhing, nausea, vomiting, weight loss, edema, no fever, no diarrhea and extended back pain. All these symptoms are very general; that is to say that parasitosis are not easy to diagnose due to the similarity of symptomatology with other diseases, so it should be emphasized the importance in the application of specific diagnostic methodology, in addition that there is no serological test that 100% sensitivity is closer. It should be started with a good medical history, the use of auxiliary exams and others.

This report indicates that after the diagnosis of the patient with strongyloidiasis after 14 months of initiation of his symptoms, he received treatment with Ivermectin, having optimal results and complete elimination of the parasite.

There are few articles of hyperinfection by *S. stercoralis*, one of them mentioned by Chacín L., (1999), in which the parasite affected stomach, intestine, lungs, liver and brain, making it the first case of Strongyloidiasis stercoralis in ascitic liquid in Peru [17].

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