

# Disseminated strongyloidiasis in immunosuppressed patient

## Abstract

Being quite asymptomatic or only with mild gastrointestinal events, infections caused by *Strongyloides stercoralis* are difficult to debunk through diagnosis. However, its evolution is often fast for disseminated cases or hyperinfection, making prevention inpatient with risk factors of utmost importance, particularly with those patients on immuno suppressive therapies. In this article, we present the case of a patient on corticosteroids and chemotherapy affected by glioblastoma multiforme, whom acquired widespread form of strongyloidiasis. Thus, the authors of this case report, highlight how important is early diagnosis and prevention within all groups at risk for this disease.

**Keywords:** strongyloidiasis, prophylaxis, immunosuppression

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## Introduction

Strongyloidiasis is a parasitic disease, caused by intestinal worms, which is contracted after contact with either the eggs or larvae.<sup>1</sup> Tropical and subtropical regions are endemic of this disease and account for about 10-40% of its affected population.<sup>2</sup> This neglected disease is prevalent in rural areas with a high incidence in children and over 65 years old individuals as well.<sup>2</sup> The old individuals are part of the risk group, as well as corticosteroids users, transplanted infected by HTLV-1 and 2, seropositive for HIV-1 and 2, patients with cancer, chronic alcohol addicted and undernourished individuals.<sup>3,4</sup>

According to former studies, it is known that strongyloidiasis shows up serious complications in immunocompromised patients, with cases of hyperinfection and dissemination and death.<sup>3</sup> It justifies the importance of expanding the knowledge and recognition of the infection caused by *S. stercoralis*, as it shows serious complications in affected immuno depressed individuals. This immune deficiency is often associated with the use of drugs, mainly corticosteroids, whose use is widespread in modern medicine due to its anti-inflammatory and immunosuppressive properties, it increases the possibilities of a therapeutic use of this type of drugs.<sup>5</sup> This way, taking in account the fact that patients on steroid therapy should be carefully monitored.

Therefore, this work presents a case in which the patient has been treated with corticosteroids in order to inhibit the spreading of a tumor, despite he died due to the spread of the *S. stercoralis* infection. Thus, this case report clearly illustrates the need for studies on this disease so that the diagnosis could be more accurate, and the most effective treatment and, especially, prophylaxis, aimed to decrease the mortality rate.

## Case report

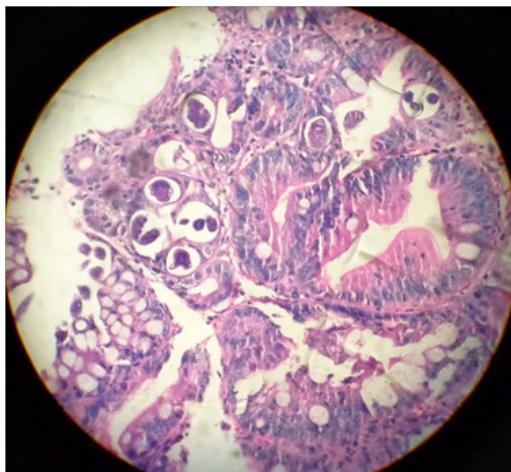
In early 2014, a 64 years-old white male was diagnosed and

operated for a Glioblastoma Multiforme withdrawal. A month later, the procedure started 30 radiotherapy sessions, oral chemotherapy with temozolamide and the use of Decadron (8mg/day). There were good neuromotor improvements with progressive recovery of the frame.

In September, there was a worsening of symptoms such as drowsiness frame, together with apathy, dizziness, loss of appetite and itching in the abdominal region with no apparent injury. During physical examination, the patient was conscious, sleepy, lethargic and pale (2+/4), presenting painful ulcers on the tongue, snoring in bilateral pulmonary base, posterior cervical nodes and enlarged left supraclavicular, distended abdomen, liver and spleen not palpable. HR: 80 bpm and BP: 120/80mmHg.

He started a research on immunological and metabolic assessment tests (Table 1), cervical and total abdominal ultrasound and chest X-ray. Doses of oxcarbazepine and Decadron were progressively decreased, but in two days there were frame grievance with drowsiness, dizziness and walking difficulties. CT scan test showed cerebral edema, being reintroduced Decadron, with partial improvement.

In the span of a week, the patient developed abdominal distention, postprandial fullness and episodes of diarrhea and vomiting. So that, he was hospitalized, in order to perform endoscopy and total abdominal ultrasound, this started having cough, hemoptysis, abdominal distension worsening and vomiting. On the same day, the presence of numerous parasite *S. Stercoralis* was detected (Figure 1) associated with prostration, bloating, periumbilical vasculitis, dyspnea and hypoxia. Thus, the patient was transferred to the ICU, where supportive measures were initiated beside oral Ivermectin (1 dose) and subcutaneously (1,6mL/day for 3 days). Within three days, the patient developed a worsening of the overall clinical picture as well as an acute renal failure and eventually death.



**Figure 1** Disseminated strongyloidiasis. Immunocompromised patient's gastric wall with numerous parasites *Strongyloides Stercoralis*.

## Discussion

Strongyloidiasis carries a fast spreading infectious process, which has few symptoms and turns out diagnosis difficult sometimes. There are several risk factors for the development of the disease, among them, immunosuppression.<sup>3</sup> A case in point is the present clinical case, in which the patient whom acquired such parasitosis was carrying glioblastoma multiforme and because of this comorbidity, both of chemotherapy (Temodal®) and corticosteroids(dexamethasone - Decadron®)have been used, drugs which trigger an induced physiological immune response decrease.

Decadron® administration is recommended in cases where Gliomas is at an advanced stage and brain edema.<sup>4</sup> However, its use can lead to adverse side effects, which are associated with dose and duration of the therapy such as hyperglycemia, myopathy, osteoporosis, avascular necrosis, gastrointestinal disorders, psychiatric disorders, seizures, opportunistic infection, thromboembolism and hypertension.<sup>3,4</sup> An experiment also detected haematological disorders (neutrophils, lymphopenia, eosinopenia, monocytopenia, basopenia) and the absence of leukocytosis in the blood of guinea pigs on corticosteroids.<sup>6</sup>

As to Temodal®, although myelosuppression is a common side effect of all alkylating agents, few patients develop treatment with Temozolomide. However, neutropenia, thrombocytopenia, lymphocytopenia are common. Being the latter often detected, though it may partially be due to concomitant use of corticosteroids.<sup>7,8</sup> Gastrointestinal adverse effects are also seen, such as nausea, vomiting and constipation, and fatigue.<sup>9</sup>

Due to its effective responses in maintaining or modulating the pathological mechanisms which are common in several diseases and procedures-cancer, transplantation, autoimmune diseases, infections, anemia, among others-immunosuppressive therapies are widely used in the medicine. However, the formerly mentioned adverse effects, these drugs are serious and can put patients at risk, requiring a careful and continuous monitoring during their administration.<sup>5</sup>

If compared to other parasitic diseases transmitted by soil, strongyloidiasis presents a difficult diagnosis, as the World Health Organization recommends the use of Kato and Katz or McMaster method, which are based on the detection of helminth eggs, though

this is becoming rare, except in advanced stages of the disease, such as hyperinfection.<sup>10</sup> Other factors that contribute to make the diagnosis difficult are the high frequency of the normal number of eosinophils in patients with strongyloidiasis, find unexpected in parasites, and the greater sensitivity of serology in chronic infection, ie before the hyperinfection and dissemination. Furthermore, in immunocompromised patients serology has lower sensitivity.<sup>3</sup>

The clinical case in question confirms the difficulty of diagnosis of strongyloidiasis, since all gastrointestinal symptoms are commonly seen as a result of administration of corticosteroids and antineoplastic. Thus, these events were considered adverse effects and not as symptoms of a new disease, namely related parasites. Then, an endoscopy test, was performed, so that make sure whether the patient had strongyloides infection or not. In such circumstances, this misconception is due to several non-specific symptoms shown by the patient and the use of several drugs. Thereby, given that any of the symptoms in these patients should be investigated, in order to verify the occurrence of an ongoing new disease, as in the current case.

According to existing studies, it is known that strongyloidiasis shows up serious complications in immunocompromised patients in a short period of time, hampering the effectiveness of an interventional treatment, which may lead to death.<sup>3</sup> In this case, the worsening of the condition, consisting on the spread of the infection, occurred within 3days, followed by death even despite parenteral therapy. Therefore, it highlights the importance of prevention with the development of protocols for risk patients.

Disseminated strongyloidiasis is often fatal and anthelmintics administered parenterally have not been approved for treatment in humans, and experiments including alternatives to oral administration are also limited,<sup>11</sup> fact which shows the urge for a research on more effective and alternative treatments as a cure of this disease. The current solution for treatment, of last choice spreading or hyperinfection strongyloidiasis is due to the parenteral use of veterinary formulation Ivermectina.<sup>12</sup> However, this still dependent pharmacokinetic studies during and after the drug administration to determine the bioavailability, toxic levels and therapeutic efficacy, in order to verify the preliminary data obtained. So far, the treatment for human remains restricted to oral options, such as ivermectin, albendazole and thiabendazole, being these the most used drugs.<sup>13</sup>

The positive results was related with parenteral administration of ivermectin raised the prospect that this therapeutic modality be more effective in severe forms. However, dosage and safety issue remain unanswered.<sup>14</sup> It follows from ineffective treatment for disseminated strongyloidiasis and cases hyperinfection high morbidity and mortality associated with this disease, after all 86% of patients progressing to death.<sup>15</sup>

In short, after a careful consideration of the above clinical case and correlation of the same with the latest studies on the subject, it shows a urge for greater attention from physicians toward patients who undergo immunosuppressive therapies, mainly with corticosteroids, as the contraction of parasitosis opportunistic as strongyloidiasis. Its importance consists on the fact that the diagnosis of this infection is as difficult as its treatment itself. Being so, it becomes relevant, in addition to the enhancement of research for the development of more precise diagnostic criteria and drugs with better chances of survival, the prevention of intestinal parasites in immunosuppression in patients at risk for the disease.<sup>15</sup>

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## Conflicts of interest

No conflicts of interests have been found.

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