Case Report

Fungal Colitis by *Paracoccidioides brasiliensis:* a case report

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ABSTRACT: Paracoccidioidomycosis (PBM) is an infection caused by a dimorphic fungus called *Paracoccidioides brasiliensis*. It occurs in Latin America, with incidence of 1 to 3 per 100,000 inhabitants in endemic areas. The digestive tract is usually not affected, but when it occurs, it may lead to events similar to colorectal neoplasm and inflammatory bowel disease (IBD). This is a case report of a 68-year-old female patient, with diarrhea without blood or mucus for 6 months, weight loss of 8 kg over the period. Abdominal ultrasonography showed some mass in the right colon, suggestive of cancer and liver perihilar lymph node. Colonoscopy showed lesions suggestive of Crohn's disease. Biopsy showed chronic granulomatous colitis of fungal etiology: Paracoccidioidomycosis. The patient did not tolerate oral treatment with itraconazole and subsequently sulfadiazine, requiring hospital admission for the treatment with amphotericin B. The presence of Paracoccidioidomycosis in the digestive tract may be associated with bloody diarrhea, mucus, rectal hemorrhage, abdominal pain, malabsorption syndrome. Histopathological studies show the fungus and a chronic inflammatory infiltrate and granulation tissue. The differential diagnoses are tuberculosis, colorectal cancer and inflammatory bowel disease. The treatment is oral antifungal (itraconazole, sulfadiazine) or intravenous (amphotericin B) based. The case has caused diagnostic confusion between colon cancer (clinical and US) and Crohn's disease (colonoscopy).

Keywords: *Paracoccidioides*; mycoses; colitis; amphotericin B.

INTRODUCTION

Paracoccidioidomycosis (PBM) is a granulomatous systemic mycosis of subacute or chronic progress, caused by a dimorphic fungus called *Paracoccidioides brasiliensis*[1-7], known due to its microscopic aspect of a "pilot's wheel". The disease was first described in 1908 by Adolfo Lutz; in 1930, Floriano Paulo de Almeida named it *Paracoccidioides brasiliensis.* Only in 1971 it was named Paracoccidioidomycosis, and it is also known as Lutz's disease, South American blastomycosis, Brazilian blastomycosis, Lutz-Splendore-Almeida disease and Lutz's mycosis[3].

PBM is considered the most important fungal infection in Latin America, with the incidence of 1 to 3 per 100,000 inhabitants in endemic areas[2], occurring from Southern Mexico to Northern Argentina[7]. Individuals affected by the disease are mostly men who live and/or develop activities in rural areas[1,8], between 30 and 59 years old[4-6,9]. The social and economic costs incurred with the debilitation of individuals in their most productive phase and extended treatment, as well as the

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frequent sequelae that can lead to early death when not opportunely diagnosed and treated[10,11], ensure high epidemiological relevance to this pathology.

The infection by *Paracoccidioides brasiliensis* affects primarily the lungs, through inhalation of the fungus, and can spread to several organs and systems, originating lesions in mucosae, lymph nodes, skin and adrenal glands[1-3,8], and it may present general symptoms, including fever, weight loss, weakness and prostration[1,8]. The digestive tract is usually not affected[2,8], around 2.7% of the cases of PBM, but when it occurs, it may lead to manifestations similar to colorectal neoplasm[2] and inflammatory bowel disease (IBD)[1]. The fungus identification is through an anatomopathological analysis of the exudate tissues or culture[2].

The purpose of this study is to report a case of bowel infection by Paracoccidioidomycosis and present a literature review.

CASE REPORT

A 68-year-old female patient, for six months complaining of diarrhea without blood or mucus. She reported weight loss of 8 kg over the period. A prior investigation through abdominal ultrasonography performed by another service showed some mass in the right colon, suggestive of cancer and liver perihilar lymph node.

Thorax and abdomen radiography and abdominal computed tomography were performed for investigation (Figure 1), without alterations; small bowel flow with evidence of anal stenosis in the ileocecal valve. Colonoscopy showed lesions suggestive of Crohn's disease. (Figure 2). The anatomopathological analysis showed chronic granulomatous colitis of fungal etiology: Paracoccidioidomycosis (Figures 3 and 4).

The patient was then submitted to an oral treatment, initially with itraconazole, and afterwards, with sulfadiazine, but neither medication was well tolerated. For this reason, the patient had to be hospitalized for the treatment with amphotericin B.

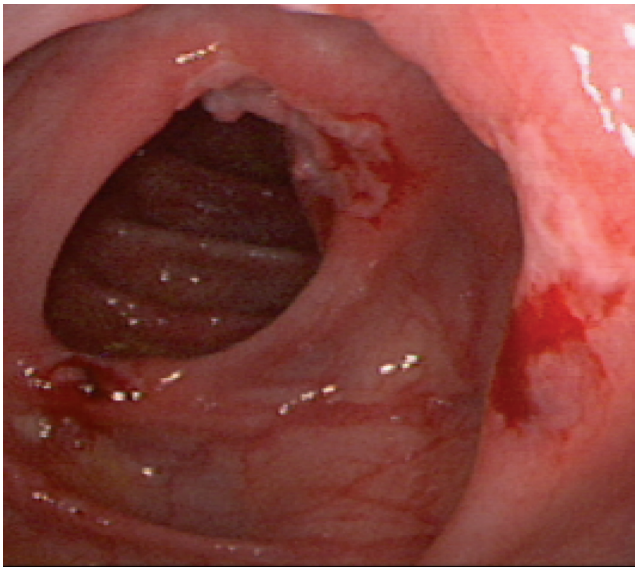

Figure 2. *Colonoscopy suggestive of IBD.*

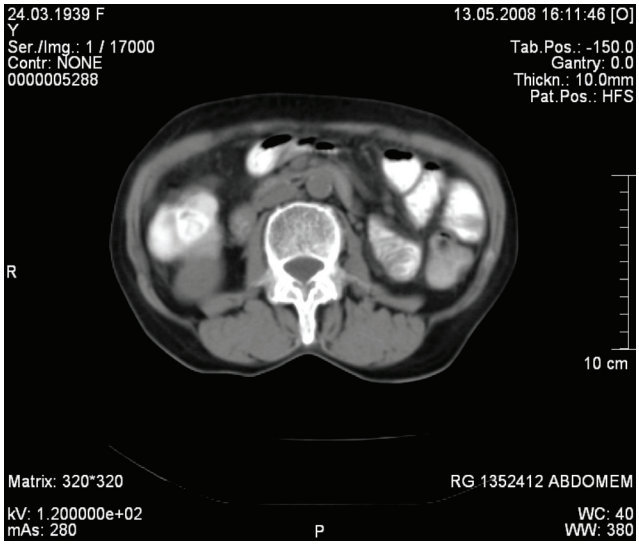

Figure 1. *Computed tomography of abdomen without alterations.*

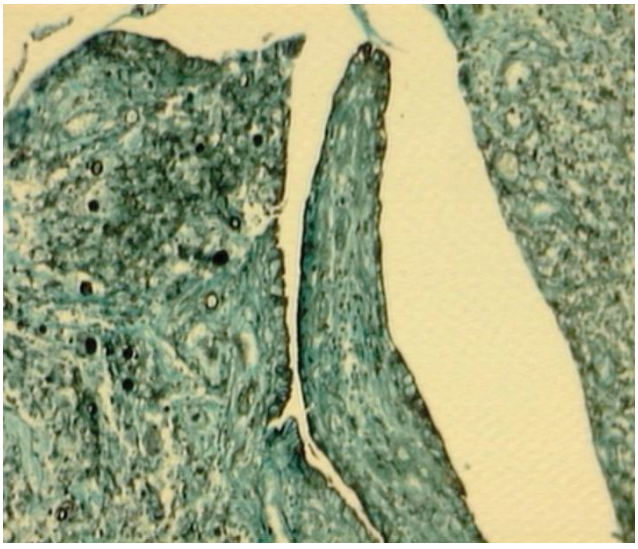

Figure 3. *Histological cut of cecum with intense inflammatory process. Color: Silver; 100X.*

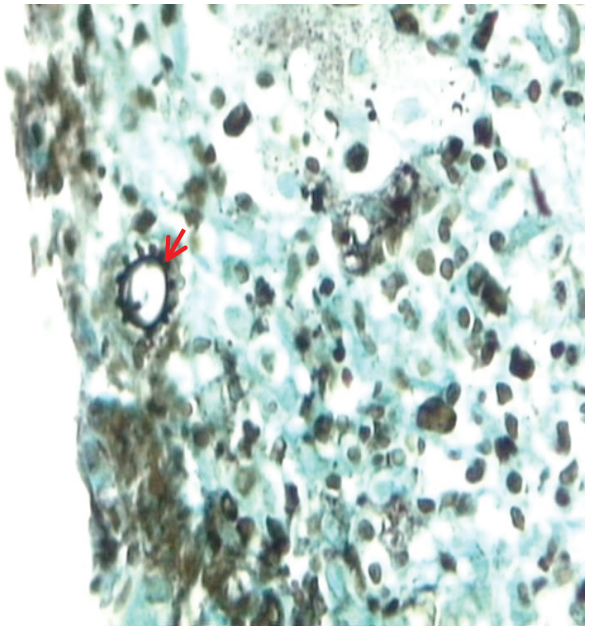

Figure 4. *Detail of Paracoccidioides brasiliensis (arrow) on bowel tissue. Color: Silver, 400X.*

DISCUSSION

The first bowel commitment by Paracoccidioidomycosis was described by Viana in 1968[12]. Unlike other types of mycosis, it is not usually related to immunodepressant diseases, although cases have been observed in association with infection by HIV, neoplasms and, more rarely, transplantation of organs[5].

The disease presents a wide spectrum of clinical manifestations, from benign local disease to multifocal systemic conditions, of difficult treatment and potentially life threatening[7]. The digestive tract is usually not affected by this disease, but when it occurs, it may be associated with bloody diarrhea, mucus, rectal hemorrhage, abdominal pain, malabsorption syndrome with protein loss enteropathy[8]. The manifestations of bowel PBM can be similar to both colorectal neoplasm[2] and inflammatory bowel disease[1], which may lead to diagnostic confusion.

Controversial assumptions have been discussed in relation to the fungus access to bowel, as there are many proposed contamination ways, including skin, mucosae, lung and the gastrointestinal tract itself. Some authors believe that the fungus would access the digestive tract from direct contamination of the intestinal mucosa[13]. Anorectal PBM cases support this assumption, where the contamination occurred in individuals accustomed to performing anal hygiene with vegetal leaves. However, experimental studies could not reproduce the lesions after fungus inoculation in the intestinal lumen. Today, the respiratory way has been accepted and proven as the main access to the fungus, with the creation of a primary pulmonary complex, followed by lymphatic and hematogenic dissemination to other organs and systems, including bowel lymph nodes and lymphoid tissues of Peyer's patches, which can affect the intestinal mucosa[14].

The diagnosis of Paracoccidioidomycosis is based on several techniques: direct methods, which include histological preparations, fresh mounts or culture exam; the indirect methods, which provide diagnosis of some level of certainty; and the imaging methods, such as tomography and magnetic resonance, widely used in the diagnostic investigation[4]. Radiography and tomography can present unspecific images, but that can suggest PBM, such as calcification of abdominal lymph anal stenosis[2]. Colonoscopy shows the global lesion of the colon with rigid wall, flat erosions with irregular edges and dispersed nodes across the congested and friable mucosa of the colon[8,15]. The anatomopathological analysis, recommended for a definitive diagnosis, shows the presence of fungus and a chronic inflammatory infiltrate, associated with granulation tissue[1,8]. However, in the last years, the progress in the diagnosis of Paracoccidioidomycosis has been strongly based on the development of serological essays. With them, it is possible to have the diagnosis and effectively determine the antifungal therapy during and after the treatment[4].

The differential diagnosis should be performed with tuberculosis, colorectal cancer and inflammatory bowel disease. Even after the investigation, the diagnostic conclusion may be difficult, as in the reported case. Although the clinical condition and US suggested colorectal cancer, colonoscopy showed lesions that suggested Crohn's disease. The evidence of fungus in the tissue was essential for the successful case management.

The treatment of Paracoccidioidomycosis consists of two phases: attack, aiming at the immediate control of signs and symptoms of the disease and the reduction of worm burden, and the maintenance, conducted until healing criteria are obtained, seeking to reduce the risk of recurrence. The effective drugs against Paracoccidioidomycosis are from three different groups: amphotericin B, from the group of polyene antibiotics; sulfadiazine and other sulfanilamide compounds; and the group of azole drugs with systemic action[3,16], prescribed according to specific indication.

RESUMO: Paracoccidioidomicose (PBM) é uma infecção causada por um fungo dimórfico: *Paracoccidioides brasiliensis.* Ocorre na América Latina, com incidência de 1 a 3 por 100.000 habitantes em áreas endêmicas. O acometimento do trato digestivo é infrequente, sendo que pode levar a manifestações semelhantes à neoplasia colorretal e doença inflamatória intestinal (DII). Relatamos o caso da paciente feminina, 68 anos, com diarreia sem sangue ou muco há seis meses, com perda ponderal de 8 kg no período. Ultrassom abdominal evidenciou massa em cólon direito sugestiva de neoplasia e linfonodomegalia peri-hilar hepática. A colonoscopia evidenciou lesões sugestivas de doença de Crohn. A biopsia mostrou colite crônica granulomatosa de etiologia fúngica: Paracoccidioidomicose. A paciente não tolerou tratamento oral com itraconazol e, posteriormente, sulfadiazina. Necessitou de internação para tratamento com anfotericina B. O acometimento da PBM no trato digestivo pode cursar com diarreia muco-sanguinolenta, retorragia, dor abdominal e síndrome de má absorção. O estudo histopatológico mostra o fungo e um infiltrado inflamatório crônico com tecido de granulação. Os diagnósticos diferenciais são tuberculose, câncer colorretal e doença inflamatória intestinal. O tratamento é feito com antifúngicos orais (itraconazol, sulfadiazina) ou endovenosos (anfotericina B). O caso levou à confusão diagnóstica entre câncer de cólon (US e quadro clínico) e doença de Crohn (colonoscopia).

Palavras-chave: *Paracoccidioides*; micoses; colite; anfotericina B.

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