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CASE REPORT

# HUMAN FASCIOLIASIS IN BRAZIL: A CASE REPORT

*Cleudson Castro[1,2], Walcymar Pereira Santiago[3], Shigueru Ofugi[3] and Valeria Paes Lima[4]*

## ABSTRACT

This is a case report of fascioliasis in a 50-year-old man who probably acquired the infection in 2006 when he presented with epigastric pain that forced him to walk bent over. Chronic symptoms included postprandial dyspepsia, dysphagia, odynophagia, headaches, belching, and epigastric pain, which persisted until 2016. He had appointments at health clinics in the State of Santa Catarina and the city of Brasília, and several diagnostic hypotheses were proposed, including cholangiocarcinoma and indolent neoplasm. Between 2009 and 2017, he had done images of the upper abdomen such as computational tomography, magnetic resonance imaging test and ultrasound examinations. All exam results revealed dilation, especially of the extrahepatic bile ducts that contained amorphous material. Blood count tests showed anemia and significant eosinophilia. Previously, low serum iron and ferritin levels normalized after treatment. After the detection of *Fasciola hepatica* eggs in three stool samples examination, he was diagnosed with fascioliasis. The patient was treated with triclabendazole 15 mg/kg/day in two doses in a single day. Four post-treatment parasitological exams showed negative results, and symptoms resolved within six months after the therapy.

KEY WORDS: *Fasciola hepatica*, Anthropozoonosis, Triclabendazole.

## INTRODUCTION

Fascioliasis, an anthropozoonosis, was first described in Brazil in the southern region heading towards the northern region. The first report of this parasitosis in Brazil dates to 1918 with the infection of cattle in the State of Rio Grande do Sul (Guimarães, 2011; Oliveira & Resende, 2017). Twelve years later, the infection was disseminated among the herds throughout this State. Between 1930 and 1932, parasitosis was widespread in Rio Grande do Sul. Data from a slaughterhouse indicated that 10.6% of slaughtered animals were

1. Catholic University of Brasília, Faculty of Medicine, Brasília, DF, Brazil.
2. University of Brasília, Tropical Medicine Center, Brasília, DF, Brazil.
3. University of Brasília, Tropical Medicine Center, Parasitological Laboratory, Brasília, DF, Brazil.
4. University of Brasília, Faculty of Medicine, Brasília, DF, Brazil.

Cleudson Castro ORCID: https://orcid.org/0000-0002-2774-382X
Walcymar Pereira Santiago ORCID: https://orcid.org/0000-0002-8173-8677
Shigueru Ofugi: the author does not have ORCID
Valéria Paes Lima ORCID: https://orcid.org/0000-0001-5909-0686

Corresponding author: Cleudson Castro. E-mail: cleudson@unb.br

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infected (Oliveira & Resende, 2017). Lutz (1921) recorded the presence of *Lymnaea cubensis* infected by *Fasciola hepatica* in the municipality of Três Rios, in the State of Rio de Janeiro, and in the 1940s, bovine infection was recorded in the municipality of Viçosa, in the State of Minas Gerais.

The first human case of fascioliasis in Brazil was described by Altini & Coelho in 1958, as cited by Alves & Martins (2013), was a Portuguese immigrant living in the State of Pará, diagnosed with eggs in the stool test (Alves & Martins, 2013). However, the first autochthonous fascioliasis case was diagnosed in a child in Campo Grande, in the State of Mato Grosso do Sul (Rey, 1958; Alves & Martins, 2013). Subsequently, in the 1960s, there were some reports of human fascioliasis in Paraíba Valley in the State of São Paulo and Cornélio Procópio in the State of Paraná (Correa & Fleury, 1971).

The fascioliasis spread through Mato Grosso do Sul and Minas Gerais, reaching the Amazonas, with a total of 57 human cases in eight Brazilian States. Most papers published until 2008 described a single case of fascioliasis (Andrade Neto et al., 2015). A study reporting the highest number of cases was conducted in Canutama, in Amazonas, where the prevalence of *F. hepatica* eggs in the stool examination was 2%, with 11 positive exams out of 558 performed (Oliveira et al., 2007). Paraná and Amazonas are the States with the highest incidence of human infection by *F. hepatica*. Of the 57 cases registered until 2015, 33 were described in the State of Paraná, including the capital, Curitiba, and the neighboring municipalities (Andrade Neto et al., 2015).

One of the most important intermediate hosts in Brazil is *L. viatrix*. In relation to Canutama, a subsequent serological survey of 434 individuals in this municipality showed 36 (8.3%) positive cases and 40 (9,2%) inconclusive by ELISA. Of the 76 samples submitted to western bloot (WB), eight of them were positive for *F. hepatica*, giving an overall prevalence of 1.8% (8/ 434). Of these eight reactive by WB, 12.5% (1/8) were positive in the stool test, confirming Canutama as an endemic municipality for human fascioliasis (Maciel et al., 2018). Although the history of fascioliasis in Brazil is over a hundred years old, there are still few human cases. The recent recount by Pritsch and Molento (2018) further reduced cases of human fascioliasis in Brazil from 57 to 48 cases. In fact, in a robust article on the epidemiology of human fascioliasis at a global level, Mas-Coma et al. (2018) describe the panorama of the epidemiological situation in South America, highlighting in detail what happens in Bolivia, Peru, and Argentina without any words on the situation of the disease in Brazil, which expresses the few cases that have occurred in the country. Perhaps clinicians are unaware of the disease, or technicians are not recognizing *F. hepatica* eggs. The documentation of this case adds to the case series.

## CASE REPORT

A case report of a 50-year-old male patient from the State of Santa Catarina referred to the infectious disease outpatient clinic at the University Hospital of Brasília (HUB) by a colleague from the State of Distrito Federal in June 2016, with a presumed diagnosis of *F. hepatica* infection. The study was approved by the Ethics Committee of the Faculty of Medicine from Universidade de Brasília (UnB; number 6.981.434). The anamnesis data from our investigation suggest that the initial critical period of the disease occurred between November 2006 and January 2007, when he presented with intense dysphagia and epigastric pain that forced him to walk bent over. During this period, he was most symptomatic, so it is presumed to have been an acute disease.

The patient presented with dysphagia, constrictive odynophagia, excessive sweating with no fever, and daily postprandial headache resistant to treatment with standard analgesics. He also mentioned drowsiness, feelings of discouragement, and belching. Occasionally, he presented with severe pruritus and mouth swelling, which required treatment with anti-allergy agents.

During his consultation at the HUB, he reported no diarrhea but mentioned epigastric pain, hypoxia, anemia, and postprandial dyspeptic symptoms, which mainly occurred at night. Thus, he was eating light meals early in the evening. Symptoms would generally be relieved three hours after dinner. Physical examination revealed normal general health, with a normal cardiorespiratory system and an abdomen with no visceromegaly.

Given that the patient's father was a farmer and frequently visited rural areas, it is probable that he had acquired the infection in the State of Parana. He lived in Florianopolis and Joinville, also in the State of Santa Catarina, for a long time, and he made several visits to farms in Mamborê and Coronel Vivida, a rural area of Parana. He had a frequent habit of consuming watercress and other vegetables, both in the countryside of Parana and Joinville. It is likely that the patient had acquired acute disease between the end of 2006 and the beginning of 2007 in the rural area of the municipalities mentioned above, but we cannot confirm the site where the patient's infection occurred. Most cases of fascioliasis described so far in Brazil are from the State of Parana, especially from the eastern region of the State (Andrade Neto et al., 2015). The State of Santa Catarina only described cases of human fascioliasis in 2019 (Pritsch et al., 2019).

Since 2012, this patient has lived in Brasília, Federal District, already presenting dyspeptic symptoms. He had several doctor's appointments and had undergone examinations in Santa Catarina and Brasília during that ten-year period. During his chronic illness (Mera y Sierra et al., 2011), he was

diagnosed with a severe liver condition. Clinicians and radiologists raised the diagnostic hypotheses of chronic hepatitis, cholangitis, sclerosing cholangitis, cholangiocarcinoma, indolent neoplasia, portal hypertension, biliary hamartomas, distal choledochal dilatation, secondary metastases.

He underwent two ultrasound examinations, two computed tomography scans, and three abdominal magnetic resonance imaging tests between November 2009 and February 2017. They all revealed similar results, including dilation of the bile ducts, especially those in the extrahepatic bile ducts, with a caliber of 11 mm in the final three centimeters and containing amorphous material. The liver images suggested the presence of lithiasis and a nodular lesion with imprecise limits. Endoscopic retrograde cholangiopancreatography was performed in Brasília on April 8, 2016, and the images were recorded. The endoscopic procedure right after the intravenous injection of ceftriaxone took 180 minutes. The endoscope was introduced up to the second portion of the duodenum, the bulging and swollen duodenal papilla was identified, and a small incision was made for the introduction of a catheter. The bile duct was catheterized, the contrast material was injected, and a dilated choledochus was observed with images of heterogeneous and amorphous filling defects that moved spontaneously, thus suggesting the presence of parasites. The intrahepatic bile ducts were not very dilated, and they had no filling defects. A biliary scan was performed with an extractor balloon, and three worms, 2 cm long each, were recovered. The worms were sent for analysis. The filling defects were no longer detected in the control cholangiography.

The recovered worms were identified as *F. hepatica* by the surgeon who performed the procedure, and even without parasitological evidence, the patient was treated with albendazole and nitazoxanide. A fecal examination performed on April 19, 2016, in a laboratory in Brasilia detected eggs of *Ascaris lumbricoides* and cysts of *Entamoeba coli*.

The surgeon who removed the parasites referred the patient to the infectious disease outpatient clinic of the HUB. He was attended on June 8, 2016, and a new parasitological stool sample examination was requested, which was carried out at the Tropical Medicine Unit.

Since the start of the investigation, the total number of white blood cells was usual when counted eight times, all with eosinophilia ranging from 14% to 36%. Between June and August of 2016, eggs of *F. hepatica* (Figure) were detected in three stool samples analyzed in the parasitology laboratory of the Tropical Medicine Unit of the University of Brasilia, which confirmed the etiological diagnosis (Valero et al., 2009), (Table 1). Considering the positive parasitological test results, the patient was treated on September 3rd, 2016, with triclabendazole 15 mg/kg/day in two oral doses on a single day (spaced by 12 hours) (Maco et al., 2015). The parasitological stool sample test results were negative 33 days after the treatment, and three other tests, performed using the Kato-Katz and Hoffmann, Pons, and Janer methods, also yielded negative

results during a period of eight months after treatment (Table 1). The response to the medication was prompt and effective. Eosinophils dropped to 5% 75 days after treatment, and the dyspepsia improved and eventually resolved.

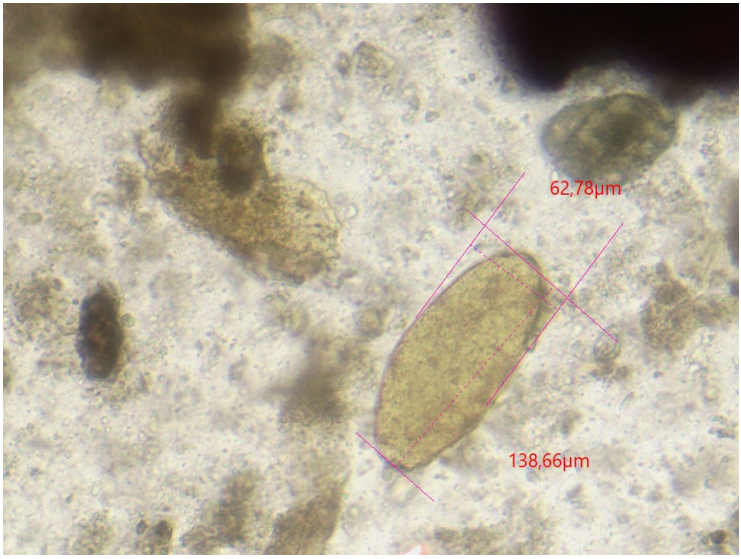


*Figure. Fasciola hepatica* egg from the patient's stool.

*Table 1.* Data of the parasitological examination before and after treatment with triclabendazole.

| Date (DD/MM/YYYY) | Kato-Katz, eggs/gram/ stool samples | Hoffmann Pons and Janer |
|---|---|---|
| 09.06.2016 | 384 | positive |
| 10.06.2016 | 96 | not performed |
| 09.08.2016 | 24 | positive |
| | Treatment on 03.09.2016 | |
| 06.10.2016 | negative | negative |
| 09.11.2016 | negative | negative |
| 09.03.2017 | negative | negative |
| 03.05.2017 | negative | negative |

## DISCUSSION

The clinical investigation of this case report, including clinical examinations and image testing, was performed by doctors from the States

of Distrito Federal and Santa Catarina between 2009 and 2017. The opinions and reports were gathered by the patient and handed in during the anamnesis. A simple stool examination allowed the establishment of a definitive diagnosis of fascioliasis, independent of the other resources. The stool examination was repeated on two occasions, and it was always positive by both the Kato Katz and Hoffman, Pons and Janer methods.

Triclabendazole was unavailable in Brazil, so a request was sent to the Ministry of Health and veterinarians in Santa Catarina and Parana, where the disease is often diagnosed in animals from these regions. We also requested triclabendazole from the doctors who treated him at the beginning of the disease in Santa Catarina but without success. The patient was instructed to import the medication, and after obtaining permission from the Brazilian Health Surveillance Agency, it was successfully imported from Vietnam as 250mg tablets and trade name Lesaxys.

The patient took triclabendazole in the aforementioned dose. He felt mild cramps, but antispasmodics were not required. More than 40 days after treatment, he still reported to have a bitter sensation of taste in the mouth, indisposition, and mild headache but improved dyspepsia. By March 2017, he already had a better appetite, with no concerns, and was drinking soft alcoholic drinks, which was not possible before treatment. He started working with enthusiasm and energy.

An improvement was also observed in laboratory test parameters. There were significant differences when comparing the results before and after treatment for various examinations (Table 2). Hematological and biochemical test results showed values within normal limits between 2.5 and 8 months after treatment. IgE values declined to 300 kU/L and ferritin levels increased to 42 ng/mL, close to normal (Table 2). Of note, the liver function tests, total protein, albumin, globulin, aminotransferases, and bilirubin were always normal during the long disease course (Valero et al., 2016). Tests performed in January 2020 showed average IgE values (110 kU/L), an increase in ferritin levels to 287.4 ng/mL, and 3% of eosinophils. The urine test, which always showed traces of hemoglobin and excess red blood cells, was typical in 2020. These results show that the patient achieved a significant improvement.

The recovered worms were kept by the surgeon who extracted them, but the patient never received the report describing the worms. It is assumed that the eggs of *A. lumbricoides* detected 11 days after the removal of the worms from the bile ducts were, in fact, eggs of *F. hepatica*. Shortly after the worms were removed, the patient used albendazole and nitazoxanide, both effective drugs for *A. lumbricoides*. In fact, *E. coli* and *A. lumbricoides* parasites cannot be responsible for the clinic presented by the patient. *E. coli* is classically a commensal parasite, and *A. lumbricoides*, although it can cause acute cases of intestinal occlusion or sub-occlusion in children, it would be unlikely to cause chronic infection for ten years in an adult individual. In addition, 13 stool tests were carried out in the laboratory of the Tropical Medicine Center by the methods of Kato-Katz and Hoffmann, Pons and Janer, and never diagnosed *A. lumbricoides.*

Table 2 – Data of laboratory tests performed before and after treatment

| Examinations | Before treatment 2014–2016 | After treatment 2016–2017 |
|---|---|---|
| Hemoglobin (g%) | 11 | 17.3 |
| Hematocrit (%) | 35.5 | 49.2 |
| Mean corpuscular volume (fL) | 69.8 | 89.5 |
| Mean corpuscular hemoglobin (pg) | 21.5 | 31.5 |
| RDW (%) | 20.4 | 12.3 |
| Eosinophils (%) | 36 | 5 |
| Serum iron (µg/dL) | 14 | 98 |
| Ferritin (ng/mL) | 8 | 42 |
| Total IgE (kU/L) | 821 | 300 |
| Total proteins (g/dL) | 6,4 | 6,7 |
| Albumin (g/dL) | 3,9 | 4,3 |
| Globulin (g/dL) | 2,5 | 2,4 |
| Alkaline phosphatase (U/L) | 61 | 70 |
| Gamma glutamyl transferase (U/L) | 19 | 25 |
| Total bilirubin (mg/dL) | 0,74 | 0,72 |
| Aspartate aminotransferase (U/L) | 25 | 27 |
| Alanine aminotransferase (U/L) | 13 | 17 |
| Fasting blood glucose (mg/dL) | 85 | 82 |
| Triglycerides (mg/dL) | 103 | 80 |
| Total cholesterol (mg/dL) | 198 | 211 |
| Creatinine (mg/dL) | 0,88 | 0,99 |

g% gram percent; ng/dL nanogram per deciliter; fL femtoliter; RDW% anisocytosis index; kU/L kilo units per liter; pg picogram; µg/dL microgram per deciliter; mg/dL milligram per deciliter; U/L, units per liter; g/dL, gram per deciliter.

The stool sample tests performed at the Tropical Medicine Unit revealed eggs of *F. hepatica* up to four months after the extraction of the worms, which shows that albendazole and nitazoxanide were not effective. This indicates that worms remained in the bile ducts, and they were only eradicated later with the triclabendazole treatment.

There are very few cases of human fascioliasis in Brazil. In a recent and thorough review covering the articles published in the last 60 years (1958 to 2016), Pritsch & Molento (2018), it has been reported only 48 cases. Of the original 57 cases described by Andrade Neto et al. (2009), nine were considered doubtful, and they had to be excluded (Pritsch & Molento, 2018). It is peculiar that only recently, the first human case of fascioliasis was published in Santa Catarina (Pritsch et al., 2019), an endemic State for the disease in cattle (Silva et al., 2020), where the patient reported in this study had lived. According to Mas-Coma et al. (2018), in some endemic areas, there are discrepant situations

in the epidemiology of the disease, with a dissociation between human and animal infection. Apparently, this dissociation is taking place in Brazil.

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## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest to disclose.

## REFERENCES

1. Alves DP, Martins IVF. Atualizações no controle parasitário da fasciolíase em bovinos. *Enciclopédia Biosfera 9*: 323-351, 2013.
2. Andrade Neto JL, Muzzillo DA, Carneiro Filho M, Siciliano RF. Fasciolíase. *In*: Veronesi-Focaccia, editores. *Tratado de Infectologia*. 5ª ed. Editora Atheneu: São Paulo, 2015. 2.380 p.
3. Correa MOA, Fleury GC. Fasciolíase hepática humana: novo caso autóctone. *Rev Soc Bras Med Trop 5:* 267-270, 1971.
4. Guimarães MP. *Fasciola hepatica*. *In*: Neves DP, Melo AL, Linarde PM, Vitor RWA. *Parasitologia humana.*12ª ed. Editora Atheneu: São Paulo, 2011. 546 p.
5. Lutz A. Sobre a ocorrência de *Fasciola hepatica* no Estado do Rio de Janeiro. *Helmintologia, Obra completa.* Editora FIOCRUZ: Rio de Janeiro, 1921. p. 665-668.
6. Maciel MG, Lima WS, Almeida FLM, Coelho LIARC, Araujo GAN, Lima MG, Maciel LHG, Pereira CAJ, Maciel TCS, Guerra JAO, Santana RAG, Guerra MGVB. Cross-sectional Serological Survey of Human Fascioliasis in Canutama Municipality in Western Amazon, Brazil. *J Parasitol Res 2018:* 1-8, 2018.
7. Maco V, Marcus L, Delgado J, Herrera J, Nestares J, Terashima A, Samalvides F , Gotuzzo E. Efficacy and tolerability of two single-day regimens of triclabendazole for fascioliasis in Peruvian children. *Rev Soc Bras Med Trop 48:* 445-453, 2015.
8. Mas-Coma S, Bargues MD, Valero MA. Human Fascioliasis infection sources, their diversity, incidence factors, analytical methods and prevention measures. *Parasitology 145:* 1665-1699, 2018.
9. Mera y Sierra R, Agramunt VH, Cuervo P, Mas-Coma S. Human fascioliasis in Argentina: retrospective overview, critical analysis and baseline for future research. *Parasites Vectors 4:* 104, 2011.
10. Oliveira AA, Nascimento AS, Santos TAM, Carmo GMI, Dimech CPN, Alves RMS, Malaspina FG, Garcia MHO, Santos DA, Aguiar GPR, Albuquerque BC, Carmo EH. Estudo da prevalência e fatores associados à fasciolose no município de Canutama, Estado do Amazonas, Brasil. *Epidemiol Serv Saúde. 16:* 251-59, 2007.
11. Oliveira DM, Resende PO. *Fasciola hepatica*: ecologia e trajetória histórico-geográfica pelo Brasil. *Estação Científica (UNIFAP) 7:* 9-19, 2017.
12. Pritsch IC, Garcia RL, Douat D, Schwendler RR, Buttendorf MRB, Molento MB. First reported case of clinical fascioliasis in Santa Catarina, Brazil. *Rev Soc Bras Med Trop 52:* e20190070, 2019.
13. Pritsch IC, Molento MB. Recount of reported cases of human fascioliasis in Brazil over the last 60 years. *Rev Patol Trop 47:* 75-85, 2018.

14. Rey L. Primeiro encontro de ovos de *Fasciola hepatica* em inquérito helmintológico de populações brasileiras, (Campo Grande, Mato Grosso). *Rev Paul Med 53:* 60, 1958.
15. Silva AEP, Freitas CC, Dutra LV, Molento MB. Correlation between climate data and land altitude for *Fasciola hepatica* infection in cattle in Santa Catarina, Brazil. *Braz J Vet Parasitol 29:* e008520, 2020.
16. Valero MA, Perez-Crespo I, Periago MV, Khoubbaane M, Mas-Coma S. Fluke eggs characteristics for the diagnosis of human and animal fascioliasis by *Fasciola hepatica* and *F. gigantica*. *Acta Trop 111:* 150-159, 2009.
17. Valero MA, Bargues MD, Khoubbane M, Artigas P, Quesada C, Berinde L, Ubeira FM, Mezo M, Hernandez JL, Agramunt VH, Mas-Coma S. Higher physiopathogenicity by *Fasciola gigantica* than by the genetically close *F. hepatica*: experimental long-term follow-up of biochemical markers. *Trans R Soc Trop Med Hyg 110:* 55-66, 2016.