

Letter to the Editor

Acute pulmonary schistosomiasis: HRCT findings and clinical presentation

Esquistossomiase pulmonar aguda: achados na TCAR e apresentação clínica

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To the Editor:

Schistosomiasis is a parasitic infection that is endemic principally in tropical and subtropical regions, where schistosomiasis-related morbidity and mortality are significant.^(1,2) It has been estimated that 200 million people worldwide are infected with the parasite and 600 million are at risk of infection.^(2,3) In the Americas, Brazil is the country that is most affected; of the 25 million people who live in endemic areas, 4–6 million are infected.⁽³⁾ Humans are parasitized by three major species: *Schistosoma mansoni*, common in Africa, Arabia, and South America; *S. haematobium*, common in Africa and Arabia; and *S. japonicum*, common in Japan and China.^(2,4) The infection occurs when humans come into contact with natural waters contaminated with cercariae, which are the intermediate hosts of the parasite.⁽⁴⁾ Schistosomiasis can be divided into three phases related to the migration of the helminth: allergic (cercarial) dermatitis, which occurs during the penetration of cercariae into the skin; acute schistosomiasis, which occurs during the oviposition phase; and chronic schistosomiasis, which is caused by the formation of granulomas and fibrosis around the helminth eggs retained in the pulmonary vasculature and can cause arteriolitis obliterans and pulmonary hypertension.^(3,5) Chronic schistosomiasis is seen in individuals living in endemic areas, whereas the acute form is most commonly seen in those who occasionally visit those areas and are therefore not immune to the parasite, although acute reinfection can occur in individuals with the chronic form.^(3,5) When the parasites reach the adult stage, they can be found in the vesical venous plexus, as occurs in the case of *S. haematobium*, or in the mesenteric venous plexus, as occurs in the case of *S. mansoni* and *S. japonicum*, the eggs being excreted in urine and feces, respectively.⁽⁶⁾

We report the case of a 16-year-old male patient who reported that, one week after

having swum in a pond, he had experienced fever and epigastric pain followed by diarrhea, vomiting, and joint pain. The patient also reported that, five days before seeking medical attention, he had experienced transitory facial exanthema and dry cough. The time elapsed between the onset of the symptoms and the first medical appointment was 20 days. The results of the laboratory tests performed during his hospital stay were as follows: leukocyte count of 16,500–26,700 cells/mm³, the proportion of eosinophils ranging from 23% to 66%; and positive parasitological stool examination (PSE) results for *S. mansoni* eggs. Posteroanterior chest X-rays revealed various nodular opacities that had ill-defined borders and were diffusely distributed throughout the lungs. The opacities disappeared after specific treatment (Figures 1a and 1b). An HRCT scan of the chest showed the pulmonary lesions in greater detail and revealed various nodules that were diffusely distributed throughout the lung parenchyma, predominantly in the cortical regions, and measured, on average, 10.0 mm; most of the nodules showed a weak halo surrounded by ground-glass attenuation (Figure 2). The patient was treated with three 1,050-mg doses of praziquantel. At the first outpatient follow-up visit, one month after discharge, the patient was asymptomatic, and the laboratory test results were as follows: leukocyte count of 7,850 cells/mm³ (eosinophils, 17%); and positive PSE results for *S. mansoni* eggs. At the second outpatient follow-up visit, two months after the treatment, the leukocyte count was 6,680 cells/mm³ (eosinophils, 9%), and the PSE results were negative for *S. mansoni* eggs.

Acute pulmonary schistosomiasis results from a hypersensitivity reaction that occurs within 16–90 days after cercariae have penetrated the skin and is due to the migration of eggs and schistosomula in the blood, initially to the

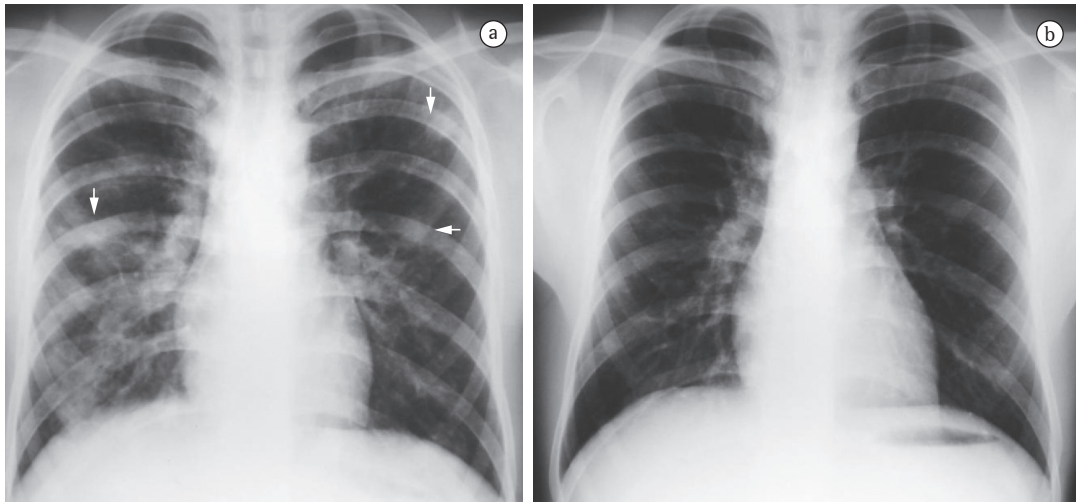


Figure 1 - Posteroanterior chest X-ray. In a, bilateral nodules in the lung parenchyma (arrows). In b, normal appearance after specific treatment.

lungs and subsequently to the hepatic portal system, where the eggs and schistosomula remain until their full maturation.^(1,3,4) Although this phase is generally asymptomatic, variable clinical symptoms can occur, principally in nonimmune individuals; the symptoms include fever, headache, anorexia, vomiting, diarrhea, dry cough, arthralgia, and myalgia, as well as eosinophils, which can range from 10% to 75%.^(1,3,4) The earliest pulmonary manifestations result from the migration of the parasite from the blood or lymph nodes to the lungs, creating a profile similar to that of Loeffler's syndrome. The radiographic pattern consists of bilateral and subpleural areas of pulmonary consolidation or ground-glass attenuation, which are typically transitory and migrate at short intervals; those areas typically disappear within one month.⁽⁴⁾ In

the acute phase of schistosomiasis, imaging tests generally reveal miliary micronodular infiltrate that spreads throughout both lungs and is similar to that seen in miliary tuberculosis or viral infection. Multiple, larger, nodules, secondary to granuloma formation, can also be seen,⁽⁴⁾ sometimes surrounded by weak hypodensity of ground-glass appearance, designated the halo sign; this hypoattenuating halo that surrounds the nodules can be caused by immune complex deposition or eosinophilic infiltration.^(1,6) The radiographic changes seen in such cases are nonspecific. However, when taken together with the clinical and laboratory findings, they allow the diagnosis of schistosomiasis. Early diagnosis and treatment of the disease are important in order to prevent severe late complications, such as pulmonary hypertension, cor pulmonale, and

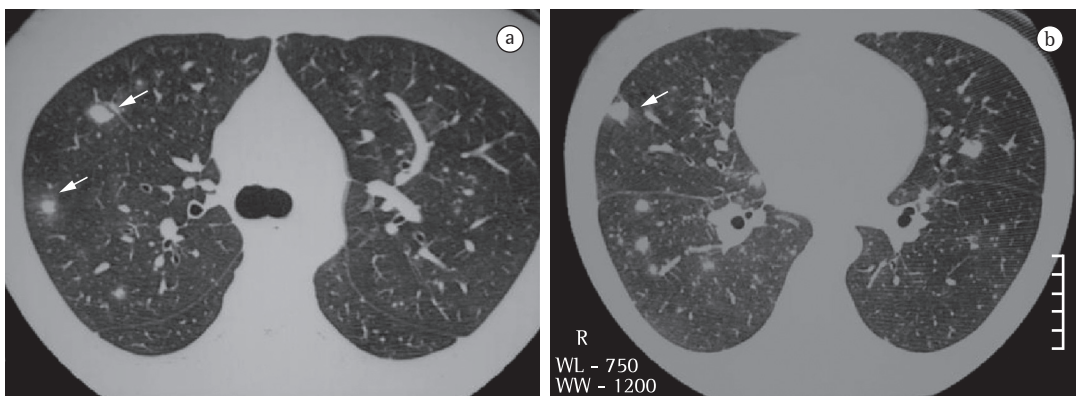


Figure 2 - HRCT slice at the level of the bronchial bifurcation (in a) and at the middle third (in b) of the chest showing nodules surrounded by ground-glass halos. The arrows indicate the largest nodules.

pulmonary arteriovenous fistulas.^(4,6) It has been suggested that CT is the best imaging method for identifying pulmonary involvement in acute schistosomiasis, given that acute schistosomiasis can occur in the absence of respiratory symptoms.⁽¹⁾

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