

Letter to the Editor

Reversed halo sign in acute schistosomiasis

Sinal do halo invertido em esquistossomose aguda

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To the Editor:

A 35-year-old rural worker presented with a 15-day history of progressive dyspnea, which, for the last 5 days, had been accompanied by dry cough, myalgia, asthenia, and fever. The patient also mentioned that he had swum in natural waters within the last 20 days. Physical examination showed mild painful hepatomegaly and splenomegaly. Chest X-rays showed bilateral reticulonodular infiltrates. An HRCT scan revealed patchy areas of ground-glass attenuation, irregular interlobular septal thickening, intralobular interstitial thickening, and small confluent nodules. Nodular reversed halos (focal, rounded areas of ground-glass opacity surrounded by more or less complete rings of consolidation) were also observed in the lower lobes of the lungs (Figure 1).

Blood tests showed leukocytosis with eosinophilia. Bronchoalveolar lavage findings were negative. The patient underwent open lung biopsy. Histological examination of the biopsy sample demonstrated areas of parenchymal granulomatous inflammation, with clusters of epithelioid histiocytes, giant cells, and some eosinophils. In addition, those areas were surrounded by chronic inflammatory cell infiltrate and numerous schistosome ova (Figure 2). The final diagnosis was acute schistosomiasis.

The patient was treated with thiabendazole and oxamniquine, showing improvement of the clinical and imaging findings over the following days. Another HRCT scan, obtained four months after treatment, showed no abnormalities.

Schistosomiasis is a major helminthic infection in tropical and subtropical regions; it has affected

an estimated 200 million people, resulting in considerable morbidity and occasional mortality.⁽¹⁻³⁾ In such regions, native populations and travelers are at risk of infection with *Schistosoma* spp.⁽²⁾ The infection is acquired through direct contact with contaminated freshwater.⁽²⁾ The spread of infection requires an intermediate host—freshwater snails specific to each *Schistosoma* species—whose geographic distribution limits the distribution of the parasite.⁽³⁾ Humans are colonized by three major species of the parasite⁽¹⁾: *S. mansoni*, common in Africa, the Middle East, and South America; *S. haematobium*, common in Africa and the Middle East; and *S. japonicum*, common in Japan and China.

Schistosomiasis progresses through three phases, as defined by 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, caused by the formation of granulomas and fibrosis around the helminth eggs retained in the pulmonary vasculature, which can result in arteriolitis obliterans, pulmonary hypertension, and cor pulmonale.⁽¹⁾ Although the clinical presentation of acute schistosomiasis varies widely, most individuals are asymptomatic. Symptoms and signs can include fever, chills, weakness, weight loss, headache, nausea, vomiting, diarrhea, hepatomegaly, and splenomegaly. The disease is usually self-limited, but severe cases can result in death.^(2,3) Marked eosinophilia can be present.⁽¹⁻³⁾

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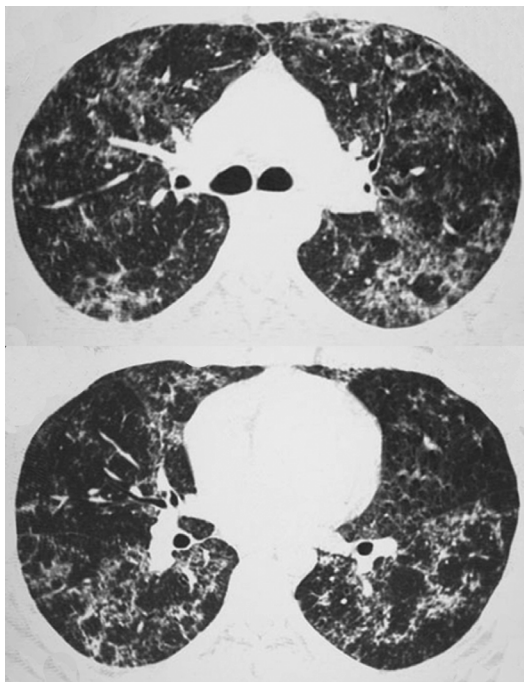


Figure 1 – HRCT scans showing patchy areas of ground-glass attenuation, small nodules, and nodular reversed halo signs in both lower lobes of the lungs.

The diagnosis of schistosomiasis is based on clinical findings, the identification of exposure to contaminated water in endemic areas, the documentation of eggs in stool samples, or serological positivity for *Schistosoma* sp.⁽⁴⁾ Early diagnosis and treatment of the disease are important to prevent severe late complications, such as pulmonary hypertension, cor pulmonale, and pulmonary arteriovenous fistulas.⁽¹⁾

The most common CT finding in patients with acute pulmonary schistosomiasis is that of small (2- to 15-mm) pulmonary nodules. Larger nodules are typically surrounded by halo signs. A pattern of bilateral diffuse ground-glass opacity with ill-defined nodules has also been reported. Significant lymphadenopathy and pleural effusion are very rare findings.⁽¹⁻³⁾

Although organizing pneumonia is considered to be the most frequent cause of the reversed halo sign, morphological aspects of the halo, particularly the presence of small nodules in the wall or inside the reversed halo, strongly suggest a diagnosis of active granulomatous disease, especially pulmonary tuberculosis or pulmonary sarcoidosis. Histopathological analysis has revealed the presence of granulomas within the ring portion of or within the reversed halo sign.

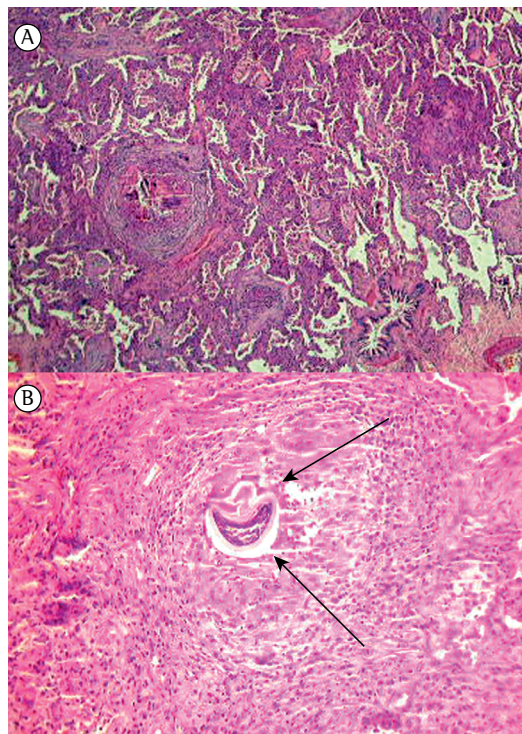


Figure 2 – Histological sections: in A, areas of granulomatous inflammation and inflammatory infiltration of the alveolar septa (H&E staining; magnification, $\times 40$); in B, schistosome ova (arrows) inside a granuloma. (H&E staining; magnification, $\times 100$).

⁽⁴⁻⁶⁾ In the present case, the reversed halo sign was observed in a patient with acute schistosomiasis.

In conclusion, schistosomiasis should be considered in the differential diagnosis of nodular reversed halo sign, particularly in patients with an epidemiological history suggestive of the disease. In the case presented here, the analysis of histological sections demonstrated that the nodules were related to the presence of granulomas.

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