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RELATO DE CASO

PULMONARY SCHISTOSOMIASIS: BRONCHOPNEUMONITIS PROBABLY DUE TO SCHISTOSOMULAE

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A clinical and radiological picture of bronchopneumonia was observed in a patient between the second and third weeks post-infection with cercariae of S. mansoni.
There was a spontaneous recovery without sequelae in 20 days and the clinical and radiological alterations were interpreted as associated with the passage of schistosomulae through the lungs.

Key words: Pulmonary schistosomiasis, Bronchopneumonitis and schistosomulae. Pre-postural schistosomiasis. Lung and schistosomulae.

In Brazil various pulmonary changes associated with *Schistosoma mansoni* infection have been reported [8 9 10 11]. These pulmonary abnormalities were mainly secondary to the presence of the eggs deviated from the portal system or to the adult parasites and their metabolic products.

This paper reports the changes visualized in the radiological study of the thorax, observed between the second and third week after the probable infecting bathe in a *S. mansoni* endemic area, of a patient who developed an acute non toxemic form of schistosomiasis.

CASE REPORT

VPR, a 17 year-old non-caucasian male, born and living in the city of Belo Horizonte, Brazil, bathed for the first time in stream water in the surroundings of his home town. During the bath and immediately afterwards he complained of disseminated cutaneous pruritus which faded spontaneously in a few hours. A week later a mild and sporadic cough developed, without expectoration or malaise. Examined in an outpatient service a chest x-ray was read as normal (Figure 1) and aspirin was prescribed. He stayed asymptomatic for another week when coughing started again, this time more intense with mucous sputum in small amounts, mild dyspnoea, asthenia and sweating. He then started to have diarrhea, five to eight times a day, with tenesmus, without pus, blood or anal pruritus. Admitted to the hospital a chest x-ray disclosed bilateral micronodules especially on the right side (Figure 2). He appeared toxemic, emaciated, the axillary temperature was 38°C, pulse was 98, respiratory rate 30 and blood pressure 120/80 mmHg. Sparse bilateral crepitating and subcrepitating rales were present. Cardiac auscultation disclosed physiological S2 splitting. The abdomen was flat with increased peristalsis. The liver was tender, palpable at 12 cm from the inferior costal magin at the right hemiclavicular line. The spleen was enlarged and tender (Boyd type II). The blood count was 4,500,000 erythrocytes per mm^3, haemoglobin 14,5 hematocrit 42%, leukocytes 16,000 per mm^3 (2% bands, 50% segs, 23% eosinophils, 0% basophils, 20% lymphocytes, 3% monocytes), ESR 35 mm in one hour and the prothrombin time 80% of normal. The levels of transaminases (SGOT, SGPT), LDH, alkaline phosphatase, urinalysis, fasting glycemia and urea were normal. Several sputum analyses for acid fast bacilli and bacterioscopy showed only isolated gram positive cocci. To assist in the diagnosis of the prepostural acute phase of schistosomiasis a needle liver biopsy was done. It showed hepatitis in small systematised foci, with an exudate of neutrophils, lymphocytes and rare eosinophils. A few hepatocytes were necrosed. Loss of basophilia was seen and hydropic degeneration in other hepatocytes. The sinusoids were narrowed in the areas of degeneration and swollen in some other areas. The Kupffer cells were hypertrophic but not hyperplastic. These findings suggest the pre-postural acute phase of the disease[1]. Six stools analyses were negative for eggs or larvae of parasites. The patient was kept in the hospital on symptomatic medication for 20 days and during this period the respiratory complaints disappeared and evacuation and consistency of the stools became normal. A control x-ray 40 days

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after the probable infecting bathe was the same as Figure 1; the patient had no symptoms at this time. On physical examination liver and spleen remained unchanged. Total leukocyte count was 10000 per mm^3 with 15% eosinophils, ESR 38 mm in one hour and the stools examination disclosed viable eggs of *S. mansoni* (Kato's method).

Figure 1: Chest x-ray. One week after the infecting bathe. The same appearance was observed 6 weeks after the infecting bathe.

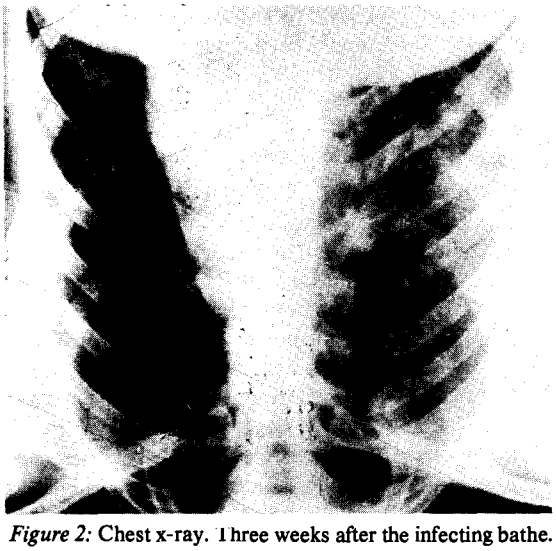

Figure 2: Chest x-ray. Three weeks after the infecting bathe.

DISCUSSION

Pulmonary involvement in schistosomiasis mansoni has been reported both in animal infections and in man. Pulmonary migration is a critical phase for the parasite. The schistosomules during migration in experimental animals can be found in the lungs around 22 hours after the cercarial penetration reaching their maximum number by the sixth day. They can stay in the lungs from three to 21 days[17] and during this period the parasite does not seem to develop. Since Lampe's work[2] it is known that the lesions in the respiratory system due to the schistosomules are inconstant and usually mild, being mainly arteriolitis, arteritis, endoarteritis and foci of necrosis[4 5 6 13]. Congestion and rupture of alveolar capillaries, with small foci of hemorrhage inside the alveolus may also occur[17]. Lichtenberg *et al*[3] have recently observed minimal focal reaction around the schistosomules in lungs of infected mice. Sami[14] and Sami *et al*[15] attributed the phenomenon of small airway obstruction to the larvae passing through the lungs, probably due to hypersensitivity reactions and/or local destruction of the schistosomulae[12].

The anatomical changes secondary to the presence of schistosomules in the human lungs are not fully understood since most knowledge stems from animal work. It is known that during this period in human infection transient or persistent respiratory symptoms may occur. Systemic manifestations like tiredness, vertigo, mucosanguineous diarrhea, diffuse lymphadenopathy, and splenomegaly may also occur, a prodrome of a toxic-infectious process[7].

The present case is of a person who immediately after contact with stream water had a disseminated cutaneous pruritus, and two weeks later developed a clinical picture of bronchopneumonia, fever, diarrhea, acute hepatosplenomegaly and blood eosinophilia. The parasitological analysis of the feces, negative at first, became positive with eggs of *S. mansoni* and the liver biopsy showed non specific hepatitis. The initial symptoms predicted a serious clinical outcome that in fact did not occur; the clinical course was benign with spontaneous recovery. This prodromal phase of acute schistosomiais mansoni has been previously reported[7]; however, in our patient we were able to witness radiologically the pulmonary changes in the pre-postural phase of the disease due to the passage through the lungs of the schistosomules. This is different to the case reported by Santiago and Ratton[16] secondary to the eggs. The x-ray resembles a bacterial or viral infection. The clinical findings of eosinophilia, diarrhea and the appearance of *S. mansoni* eggs in the stools and the liver biopsy pattern confirmed the diagnosis of lung involvement secondary to schistosomiasis. We still have no way of explaining the predominantly right side involvement of the lung but it may be due to the pattern

of migration of the schistosomulae from the lungs to the liver[1]. The clinical evolution excluded other parasitic infections.

In this case the schistosome infection behaved clinically like a bronchopneumonitis and radiologically as a diffuse non migratory micronodular condensation with spontaneous and complete recovery in 20 days.

It must be emphasized that: 1. the exuberance of the prodromal period is not always followed by a serious clinical course; 2. the pulmonary changes secondary to the schistosomules may be intense enough to be expressed as respiratory symptoms; 3. the radiological picture may be that of a bronchopneumonitis; 4. local and systemic hypersensitivity phenomena could be responsible for the clinical and radiological manifestations.

RESUMO

Relata-se o caso de um paciente que após 2 a 3 semanas de contato infectante com cercárias desenvolveu quadro clínico e radiológico de broncopneumonite. O paciente não possuía infecção esquistossomótica anterior. Houve recuperação espontânea, sem seqüela em 20 dias e as alterações clínico-radiológicas foram interpretadas em associação à passagem de esquistossômulos pelos pulmões.

Palavras chaves: Esquistossomose pulmonar. Broncopneumonite por esquistossômulo. Esquistossomose pré-postural. Pulmão e esquistossômulo.

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