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Paracoccidioidomycosis in a four-year-old boy

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Summary

A case of fatal, generalized paracoccidioidomycosis is described in a four-year-old urban dwelling child. Marked lympadenopathy, hepatosplenomegaly and an abdominal mass were the main clinical manifestations. The diagnosis was established by histopathological studies and culture. The authors comment on the rarity of this infection in children less than 7 years of age and on the importance of considering this pathology in the differential diagnosis of malignant non-Hodgkin lymphoma and tuberculosis, in children.

Introduction

Paracoccidioidomycosis occurs most frequently between the ages of 30 and 50, being infrequent in childhood (2–4, 7, 8, 11, 13, 15–17). In a review of the literature Ramos *et al.* (15) found only 40 cases of paracoccidioidomycosis in children less than 10 years of age.

In spite of the low frequency of reported cases of paracoccidioidomycosis in childhood, many authors have demonstrated by paracoccidioidin skin tests that exposure to *Paracoccidioidis brasiliensis* can occur very early in life (1, 12, 19). According to Pedroza (12) 39,5 percent of children between 6 and 15 years of age have a positive reaction to skin tests.

This paper reports the first case of childhood paracoccidioidomycosis observed in Bahia. Also of interest is the fact that this disease was acquired in an urban setting.

Case report

A four-year-old male from Salvador (Bahia, Brazil) was admitted to the Oncology Unit of Hospital Martagão Gesteira in December, 1983 with a presumed diagnosis of malignant non-Hodgkin lymphoma. The disease first presented four months prior to admission as cervical lymphadenopathy. The main complaints were fever, dry cough, loss of weight, dyspnea, headache and weakness.

Past history

Eighteen months before this admission the child had an undiagnosed pulmonary disease that required hospital admission. Details of that admission are unavailable.

Epidemiological data

The child had always resided in a poor district at the periphery of Salvador with his parents and three brothers. These was no history of having lived in a rural area. The family was apparently healthy and had negative immunodiffusion tests with paracoccidioidin.

Physical examination

On this admission the patient was in poor condi-

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tion with cachexia, edema, anemia and a generalized and marked lymphadenopathy. A marked hepatosplenomegaly and a palpable abdominal mass were also detected. On examination of the skin, many scaly papules, sometimes covered by crusts, were seen on the forehead and scalp. Crepitant rales were audible at the base of the left lung.

Laboratory studies

They revealed a marked anemia, a white blood cell count of 13 000 with 82 percent polymorphonuclear cells, with a marked shift to the left, 18 percent lymphocytes and 0 percent monocytes. Immunodiffusion test with paracoccidioidin was positive. The same test using histoplasmin and aspergillin was negative. X-ray examination of the chest disclosed a mediastinal mass, hilar adenopathy and a discrete interstitial infiltrate at the bases. Biopsy of a cervical lymph node showed a granulomatous inflammation with fungal elements charaterized as *P. brasiliensis*. Having established a diagnosis of paracoccidioidomycosis the child was transferred to the tropical Diseases Clinic of Hospital Prof. Edgard Santos (Federal University of Bahia) to be treated, but died the same day.

Postmortem examination

Besides a generalized lymph node enlargment and skin lesions, many osteolytic areas draining necrotic material were seen in the skull, bilateral pleural effusions were also observed. The mediastinal and mesenteric lymph nodes were markedly enlarged and fused, assuming the aspect of pseudotumoral mass (Fig. 1). The cut surface of the lymph nodes showed extensive areas of caseous necrosis. The thymus was also enlarged and presented the same aspect. The spleen was greatly enlarged, friable and severely involved (Fig. 2). The liver weighed 900 g. and showed many pale-yellowish, small nodules scattered throughout the cut surface. Necrotic areas of different sizes were detected throughout the intestinal mucosa. The cecal appendix was entirely necrotic. There were no important gross alterations in the lungs. Histologically, the lesions consisted of extensive areas of caseous necrosis surrounded by granulomatous inflammation with a great abundance of fungal elements that became confluent in many areas

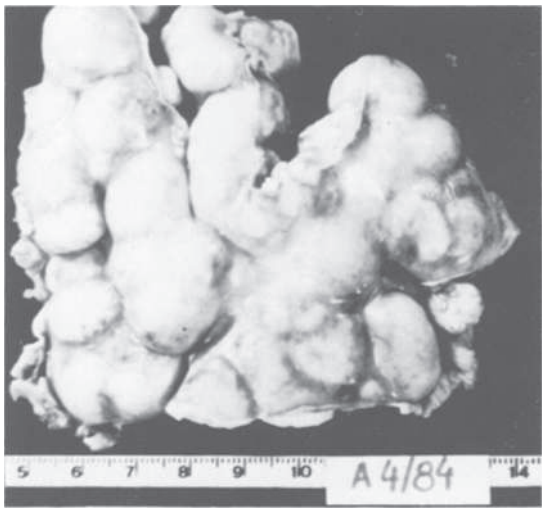


Fig. 1. Fused mesenteric lymph nodes.

(Fig. 3). They appeared as multibudding double-walled yeast elements easily detectable in HE stained sections. By Grocott impregnation the multibudding pattern was better vizualized (Figs. 4 and 5).

The necrosis was predominantly seen in lymph nodes, thymus and spleen. In the intestines the lesions were frequently present in the Peyer patches but sometimes involved all the intestinal layers. In the lungs small granulomas without necrosis or fungal elements were seen in focal areas in the interalveolar spaces. The granulomatous lesions at the hilum were contiguous with the lesions of the hilar lymph nodes.

In conclusion, the disease extensively involved the lymph nodes, thymus, spleen end intestines and less extensively skin, bone, bone marrow and liver. The immediate cause of death was disseminated intravascular coagulation.

Mycology

Small fragments of involved tissues and pleural fluid were treated with 10 percent potassium hydroxide for microscopic examination. Many characteristic large spherical, double-walled, multibudding elements of *P. brasiliensis* were seen. A small frequent of a mesenteric lymph node was cultured in Sabouraud Dextrose Agar (DIFCO) at room temperature. The culture was maintained at

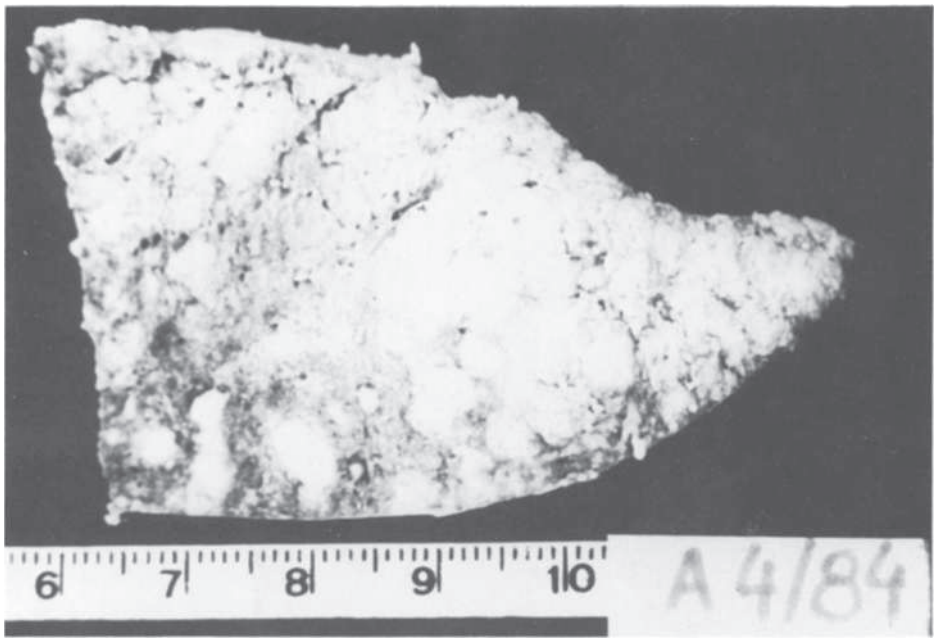


Fig. 2. The cut surface of spleen; many confluent whitish rounded areas are seen.

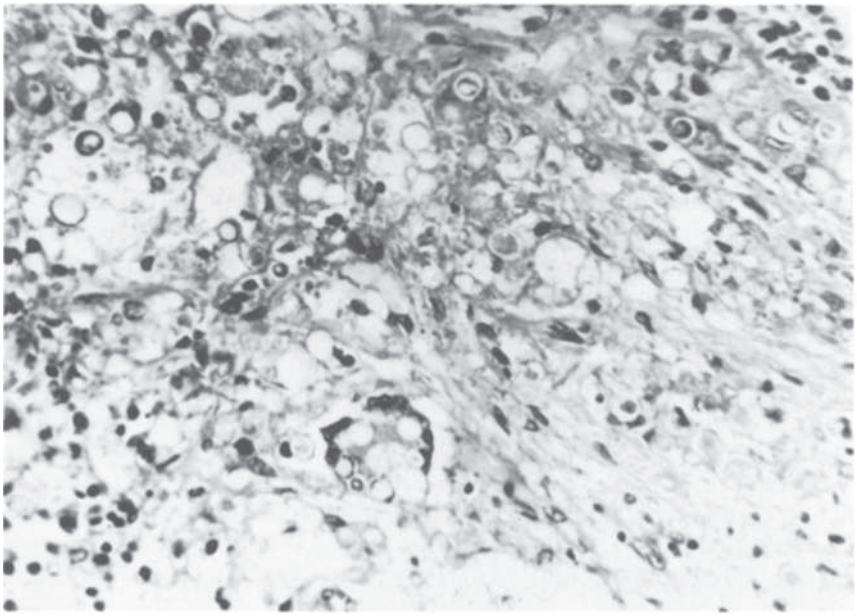
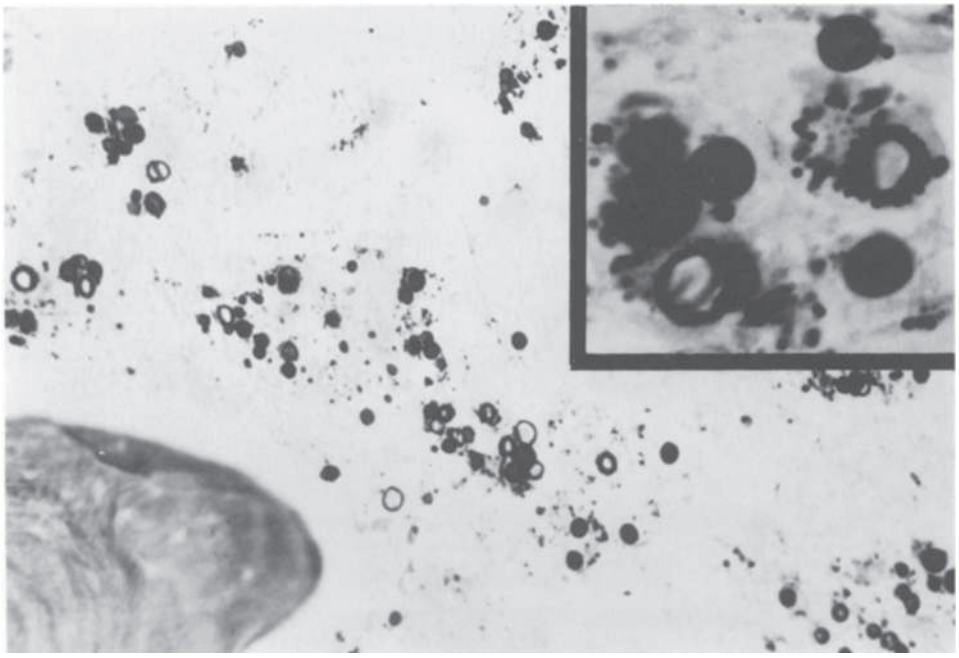


Fig. 3. Lymph node. Note a great abundance of yeast elements of *P. brasiliensis* in necrotic tissue. A giant cell is full of these elements. H.E. × 400.



I 'g. 4. Bone marrow with many forms of *P. brasiliensis*. Grocott impregnation. ×400. At the right upper corner, note the multibudding forms. Grocott impregnation. Grocott × 1000.

37 °C in order to obtain the yeast form of *P. brasiliensis*.

Comment

Considering the recent concept of the inhaled route of infection in paracoccidioidomycosis, this disease has been classified as: (1) An asymptomatic primary pulmonary form; (2) An acute or symptomatic primary pulmonary form; (3) A progressive pulmonary form; (4) A chronic localized or generalized disseminated form of the adult; (5) An acute or subacute juvenile disseminated form (7, 8, 9). In childhood, the disease is almost always generalized; it differs from the generalized and disseminated form of the adult because it involves predominantly the lymph nodes and only rarely the mucosal and the lungs. Also, the evolution of disease in childhood is not chronic as observed in aldults (4, 7, 10, 14).

The present case was classified as an acute juvenile disseminated form of paracoccidioidomycosis. This form of disease can originate directly from the initial pulmonary lesion, lacking a latent period. In the present case, however, there was probably a short latent period. The child had one and a half year earlier an unknown pulmonary disease that required hospital admission. The mild granulomatous pulmonary inflammation found at autopsy certainly represented the primary lesions.

A predimonant involvement of all the hematopoietic organs was observed. The Peyer patches of the intestinal submucosa were extensively involved as well. Although the bone lesions occur generally in children over 9 years of age (9), in the present case they were intensive causing osteolytic areas in the skull.

The infection by *P. brasiliensis* occurs generally in persons of rural areas but there are a few references to patients infected in urban areas (8), as occurred in the present case. Therefore, paracoccidioidomycosis is becoming a health problem of the urban areas.

As noted earlier, the occurrence of paracoccidioidomycosis in children is infrequent but before seven years of age it constitutes a rarity. We found only 11 of such cases in the literature(2, 4–6, 18).

Considering that humans acquire this infection early in life (9) it is probably that this rarity of cases does not represent a real fact. Certainly, the lack of knowledge about the juvenile form of this infection leads the pediatrician to misdiagnose many cases. Also, because the old concept that the skin and oral mucosa are the portals of entry of the *P. brasiliensis*(7), this infection is generally not considered in the differential diagnosis of pulmonary diseases in children.

This clinical entity in childhood presenting as an abdominal mass and a generalized lymphadenopathy must be considered in the differential diagnosis of malignant non-Hodgkin lymphoma and tuberculosis. Early diagnosis is very important since the disease can be treated and can be fatal if unrecognized.

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