

INTESTINAL CRYPTOSPORIDIOSIS. ASSOCIATION WITH PNEUMOCYSTIS CARINII, CYTOMEGALOVIRUS AND CANDIDA SP. INFECTIONS.

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S U M M A R Y

This is a case report of intestinal cryptosporidiosis diagnosed in histological specimen collected from autopsy. The patient was a child of 5 months admitted to the hospital with severe acute diarrhea associated with *Pneumocystis carinii* pneumonia, cytomegalic sialadenitis, oral and dermal candidiasis. The presence of multiple opportunistic infections in this case indicated immunodeficiency state.

Cryptosporidium sp is a possible etiology of acute diarrhea in both immunodeficient and immunocompetent patients and has to be searched for at autopsy when diagnosis was not possible "in vivo".

KEY WORDS: Immunodeficiency; Diarrhea; Cryptosporidiosis.

I N T R O D U C T I O N

Cryptosporidiosis is a frequent protozoan intestinal infestation affecting guinea pigs, turkeys, mice, calves and other animals; extra intestinal cases are described in animals but are very uncommon in human beings⁶. The parasite is a tiny organism of 2 μm to 6 μm that adheres to the microvillous border of enterocytes.

Human infestation by *Cryptosporidium* sp has been described in immunologically compromised patients chiefly in acquired immunodeficiency syndrome (AIDS); therefore cryptosporidiosis has been considered an opportunistic infection along with *Pneumocystis carinii*, *Cytomegalovirus*, *Candida albicans*, *Cryptococcus neoformans*, *Entamoeba histolytica* and *Herpesvirus*². As a consequence, human cryptosporidiosis has been receiving more attention nowadays, and cases associated with mild and selfli-

mited diarrhea in immunocompetent patients have been recently described^{1, 3, 10}.

The main diagnostic method in the past was intestinal biopsy and histological detection of the protozoan but recently it has been successfully replaced by identification of the oocysts in fecal flotation⁷.

In Brazil there are two reports about cryptosporidiosis and acute diarrhea in the North⁴ and Northeast¹¹, no cases having been reported from the South.

CASE REPORT

The patient was a five-month-old girl who was hospitalized for having had severe diarrhea, vomiting and malaise during the last 12 days.

She was presented with dyspnea and cyanosis at the moment of hospitalization and in about 12 hours progressed to respiratory failure and death; interstitial pneumonia was the clinical and radiological diagnosis.

The child had been breast-fed during the first 3 months of her life, and then bottle fed. Since then she started having repeated upper respiratory infections. During the last 12 days she had oral and dermal candidiasis, clinically diagnosed. She died and the autopsy was performed.

The child had the normal height for age (60 cm), a mild emaciation and mucocutaneous paleness; the body weight was 5.500 g.

Grossly the whole lung was congested, subcrepitant and on sections there was a slight ooze of frothy fluid characterizing interstitial pneumonia. The pleura was smooth without effusions.

Pneumocystis carinii was confirmed by light microscopy (Fig. 1).

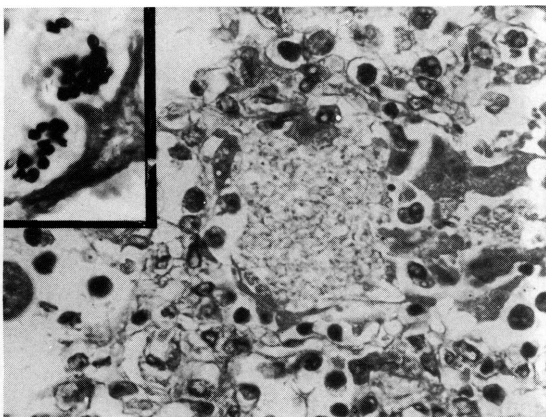


Fig. 1 — Lung with *Pneumocystis carinii* pneumonia. H & E 400x. Inset — Gomori staining 400x.

Intestinal cryptosporidiosis (Fig. 2) and cytomegalic sialadenitis (Fig. 3) were the main histological findings, associated with extensive lymphoid depletion in lymph nodes, spleen and thymus. Thymic size was small weighing 9 g;

histologically there was no structural change but hypoplasia without fibrosis.

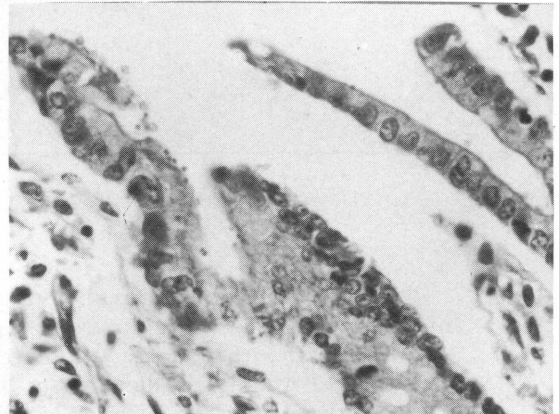


Fig. 2 — Small intestine with *Cryptosporidium*, sp on the brush border. H & E 400x.

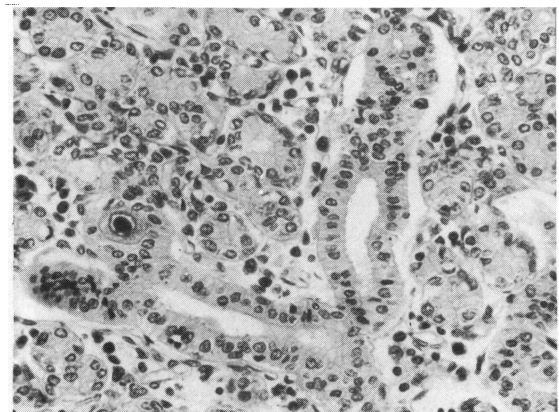


Fig. 3 — Salivary gland showing cytomegalovirus inclusion and sialadenitis. H & E 250x.

After histological diagnosis of cryptosporidiosis, samples of intestinal mucosa from paraffin blocks were taken and processed for electron microscopy; trophozoites (Fig. 4) and macrogametocytes (Fig. 5) were found.

DISCUSSION

This was the first case of intestinal cryptosporidiosis found in our laboratory. Since authors

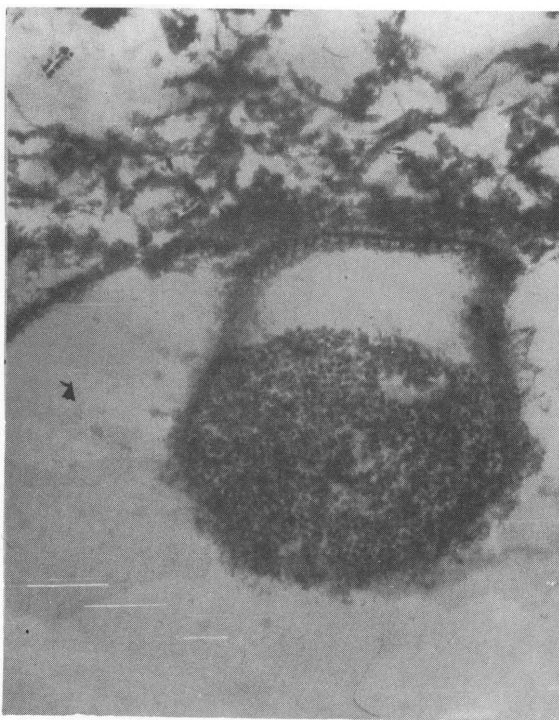


Fig. 4 — *Cryptosporidium*, sp trophozoite EM 50.000x

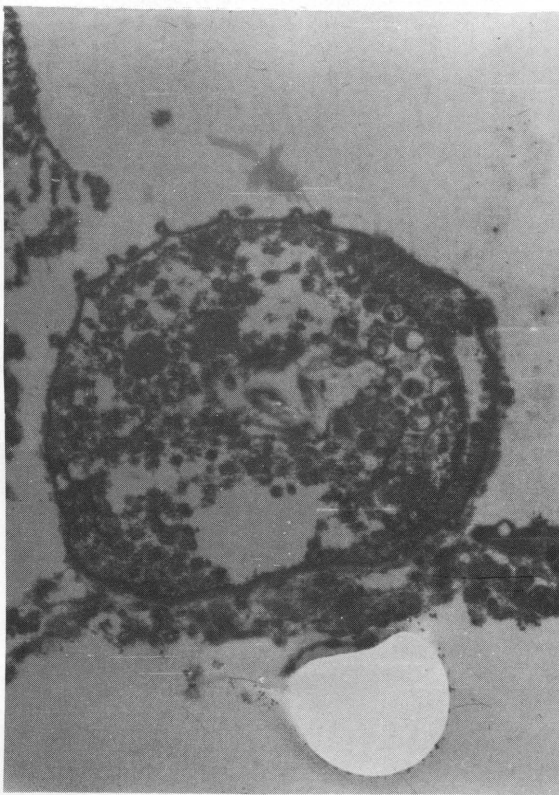


Fig. 5 — *Cryptosporidium*, sp macrogametocyte. EM 21.000x.

agree that this is an easily overlooked infection when one is not familiar with the morphology of the agent we reviewed 66 other autopsy cases from undernourished children with acute diarrhea with or without *Pneumocystis carinii* and/or cytomegalovirus infections. No other case of cryptosporidiosis was found.

Immunodeficiency was diagnosed as primary disease in our patient although there were no supportive laboratory data. Our morphological diagnosis was based on the histological findings of lymphoid depletion and multiple opportunistic infections. This feature could be related to AIDS⁸ but there was no familial history and since she was a small child we could not exclude the possibility of congenital immunodeficiency⁹. Nevertheless the absence of fibrosis and structural change in thymus could be interpreted as a consequence of undernourishment and stress.

The aim of this paper is to present another Brazilian case of cryptosporidiosis stressing the histological features at autopsy and to call attention to the need of proper fixation of the intestines to provide the maintenance of intestinal villous mucosa necessary to the identification of the parasite.

Cryptosporidium sp must be considered as a possible etiology for an acute diarrhea mainly if the patient is immunodeficient. It may be cause of sporadic diarrhea in developed as well as in developing countries; usually this diarrhea is associated with fever, differing from diarrheas caused by other protozoans⁵. Mild to moderate intestinal villous atrophy may be found in association to this infection.

The source of infection seems to be the stool of infected animals but BOGAERTZ et al¹ described a case without any contact with animals; they believe that people, food and other sources may play a role in transmission of oocysts.

RESUMO

Criptosporidiose intestinal associada a infecções por *Pneumocystis carinii*, cytomegalovirus e *Candida* sp.

Trata-se de apresentação de um caso de criptosporidiose intestinal diagnosticada histologicamente em material de autópsia.

A paciente era uma criança de 5 meses, internada com diarreia aguda grave, associada a pneumonia por *Pneumocystis carinii*, sialadenite citomegálica e candidíase oral e cutânea. A presença de infecções oportunistas múltiplas indicaram o diagnóstico de imunodeficiência.

Cryptosporidium sp é uma possibilidade etiológica para diarreias agudas em pacientes imunodeprimidos ou imunocompetentes e deve ser procurado em material de autópsia quando não diagnosticado "in vivo".

REFERENCES

1. BOGAERTZ, J.; LEFAGE, P.; ROUVROY, D. & VANDEPITTE, J. — *Cryptosporidium* sp, a frequent cause of diarrhea in Central Africa. *J. clin. Microbiol.*, 20: 874-876, 1984.
2. CHIAMPI, N. P.; SUNDBERG, R. D.; KLOMPUS, J. P. & WILSON, A. J. — Cryptosporidial enteritis and *Pneumocystis* pneumonia in a homosexual man. *Hum. Path.*, 14: 734-737, 1983.
3. CURENT, W. L.; REESE, N. C.; ERNST, J. V.; BAILEY, W. S.; HEYMAN, M. B. & WEINSTEIN, W. M. — Human cryptosporidiosis in immunocompetent and immunodeficient persons. *New Engl. J. Med.*; 308: 1252-1257, 1983.
4. LOUREIRO, E. C. B.; LINHARES, A. C. & MATA, L. — Acute diarrhoea associated with *Cryptosporidium* sp in Belem, Brazil. *Rev. Inst. Med. trop. S. Paulo*, 28: 138-140, 1986.
5. MATA, L. — *Cryptosporidium* and other protozoa in diarrheal disease in less developed countries. *Pediat. infect. Dis.*, 5 (Supplement): S117-S130, 1986.
6. MILLER, R. A.; WASSERHEIT, J. N.; KIRIHARA, J. & COYLE, M. B. — Detection of *Cryptosporidium* oocysts in sputum during screening for mycobacteria. *J. clin. Microbiol.*, 20: 1192-1193, 1984.
7. REESE, N. C.; CURRENT, W. L.; ERNST, J. V. & BAILEY, W. S. — Cryptosporidiosis of man and calf. A case report and results of experimental infections in mice and rats. *Amer. J. trop. Med. Hyg.*, 31: 226-229, 1982.
8. REICHERT, C. M.; O'LEARY, T. J.; LEVENS, D. L.; SIMRELL, C. R. & MACHER, A. M. — Autopsy pathology in the acquired immunodeficiency syndrome. *Amer. J. Path.*, 112: 357-382, 1983.
9. ROGERS, M. F. — AIDS in children: a review of the clinical, epidemiologic and public health aspects. *Pediat. Infect. Dis.*, 4: 230-236, 1985.
10. WEIDERMANN, B. L.; KAPLAN, S. L. & MARINO, B. — Prevalence and significance of cryptosporidiosis in children. *Pediat. infect. Dis.*, 4: 292-293, 1985.
11. WEIKEL, C. S.; JOHNSTON, L. I.; DE SOUZA, M. & GUERRANT, R. L. — Cryptosporidiosis in northeastern Brazil. Association with sporadic diarrhea. *J. infect. Dis.*, 151: 963-965, 1985.

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