

## Case Report

# Human Cryptosporidiosis: A Case Report

Shehab A Al-Shehab, Khaled Taha, Majid Idrees  
Infectious Diseases Hospital, Kuwait

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### INTRODUCTION

Cryptosporidiosis is an intestinal infection affecting mostly the jejunum with the intracellular protozoan parasite *Cryptosporidium* species. The first human infection was reported in 1976<sup>[1]</sup>. The disease can affect the immunocompetent as well as the immunosuppressed population<sup>[2]</sup>. Of the two species of *Cryptosporidium* infecting mammals, *C. parvum* is the one which also infects humans<sup>[3]</sup>. Diagnosis of such infections depends upon detection of the parasite in the stool or through a serological test by detecting parasite antibodies<sup>[4,5]</sup>.

In patients with AIDS, *Cryptosporidium* can cause either severe enteritis or asymptomatic infections with mild intestinal symptoms<sup>[6,7]</sup>. We present the first case of cryptosporidiosis with AIDS seen in Kuwait.

### CASE HISTORY

A 36-year-old Kuwaiti patient who tested positive for HIV in 1992 presented in October 1995 with *Pneumocystis carinii* pneumonia (PCP). Trimethoprim and dapsone were used for treatment since he was hypersensitive to cotrimoxazole. The patient was kept on dapsone and pyrimethamine as prophylaxis against PCP. The patient was reluctant to take anti-HIV drugs regularly because he was concerned by reports of the side effects of these drugs. His CD4 count was 100/microliter.

On December 1995, the patient presented with a three-week history of diarrhea without fever. He was passing about 8-10 profuse liquid stools per day together with abdominal distension, anorexia and weight loss of approximately five kilos in one month. Additionally, he had a history of psychological upset and sleep disturbance.

On examination, the patient appeared to be depressed with a loss of interest in life. All vital signs were normal including pulse, blood pressure, temperature and respiratory rate. No abnormal findings were found in the chest and cardiovascular examinations. Hepatosplenomegaly

was detected during his follow-up visit before the attack of diarrhea and persisted until this examination. Fundus examination was normal in both eyes.

### INVESTIGATIONS

Complete blood picture revealed pancytopenia (Hb 10g/dL, WBC  $2.7 \times 10^9$  and platelets  $122 \times 10^9$ /L) CD4 count became 27/microliter. Blood cultures were negative for bacteria and mycobacteria. Routine stool examination was negative for parasites. However, it was positive for oocysts of *Cryptosporidium* by using sofranin-methylene blue stain<sup>[8]</sup>. Routine biochemical tests were within normal range.

Although paromomycin is a promising drug in cryptosporidiosis, it was not available in the medical stores<sup>[6]</sup>. While the patient was kept on pyrimethamine-dapsone (for PCP) prophylaxis, metronidazole (500 mg 8 hourly) was added orally, as it was shown to be effective in the treatment of such infection in AIDS patients<sup>[9]</sup>. It was rapidly discontinued as the patient could not tolerate the vomiting and the metallic taste of the drug. After that, the patient was given Loperamide to decrease the motions. The diarrhea improved temporarily, but returned again upon stopping the drug.

In addition, the patient was given tetrizolol (amyltriptyline hydrochloride) 10 mg daily to treat his depressed mood and to improve his sleeping pattern.

The frequency of diarrhea started to decrease gradually and steadily 10 days after beginning the antidepressant therapy until he was passing one to two almost normal motions after four weeks. Moreover, the patient's appetite improved and he gained weight steadily. He no longer complained of diarrhea, even after stopping the treatment. Stool examinations were done twice for *Cryptosporidium* but failed to show the parasite. However, repeated CD4 count was 25/microliter.

## DISCUSSION

AIDS patients with diarrhea are considered a great challenge in clinical work in order to reach the correct diagnosis and consequently the effective therapy. This is because many organisms are incriminated and a long list of investigations may be required to gain the actual etiology<sup>[10]</sup>. Provided the patient is fully investigated, some physicians have considered a diagnosis of clinical cryptosporidiosis in any AIDS patient with diarrhea and other gastrointestinal symptoms leading to a physician visit with a positive stool examination for *C. parvum* oocytes<sup>[11]</sup>. Our patient fit this definition. A long list of investigations had been carried out and were proven negative except for *C. parvum* oocytes in the stool. Furthermore, the patient's symptoms improved simultaneously and stool samples were negative for the parasite.

Another problem which can be faced when dealing with AIDS patients with diarrhea is the publicity of AIDS syndrome and its serious complications as well as the known side effects of drugs with uncertain efficacy used in the treatment. All these can lead to psychological upset and can affect the compliance of the patient to the therapy.

Our reported patient is an example of this condition. He often escaped from people to the desert where he had a camp and he used to come in contact with sheep, cattle and pets, which may have been the source of infection. However, other sources, like domestic water supply, could not be ruled out<sup>[12]</sup>.

It is reported that the clinical spectrum of cryptosporidiosis in AIDS varies from asymptomatic or mild symptoms to severe enteritis according to CD4 count<sup>[2,7]</sup>. Our case is an exception as the diarrhea encountered in our patient improved markedly, despite the fact that his CD4 count remained the same, which implies that factors other than CD4 count, such as local and systemic immune responses, can affect the course of the disease<sup>[13]</sup>.

The mechanism of cryptosporidial diarrhea is still unclear<sup>[2]</sup> but some factors such as enterotoxin-mediated secretions and damage of intestinal cells by the parasite may play a role<sup>[13]</sup>. Recently the role of gastrointestinal peptides, such as somatostatin on gut motility, has explained the mechanism of diarrhea in many cases. This is in agreement with the previous work done by Simon<sup>[12]</sup> who demonstrated resolution of *Cryptosporidium* and improvement of diarrhea in an AIDS patient after an intake of octereotide which is a somatostatin analogue regulating intestinal motility to its normal rhythm. It was well established that flaring up of cryptosporidiosis as an opportunistic infection in AIDS might be related to defective humoral

immunity (mainly deficient IgA) and impaired cell mediated immunity in terms of CD4 count<sup>[3,16,17]</sup>.

The question remains, though, what caused our patient to improve. Many explanations could be raised: First, cryptosporidiosis could be a self-limited disease in AIDS patients with CD4 more than 150/ml but it would be unlikely in our patient with CD4 = 25/ml<sup>[16]</sup>. Second, Loperamide, which was prescribed, could decrease the hyperactive gut motility giving a better chance for local immune reaction to act against the pathogen<sup>[18]</sup>. Similar to Loperamide, Treptizol has a strong anticholinergic effect and thus decreases the motility of the gut. Third, improving the psychological status by Treptizol could result in a good appetite and a regular weight gain, which could in turn improve local and or systemic immunity. Fourth, as a result of regulating the gut motility and improving nutritional status of the patient, gastrointestinal hormones could increase, consequently this could ensure a better local immune response with the net result of a better clearance of the offending pathogen. Moreover, the local immune reaction can stimulate production of interferon gamma which improve the macrophage function and can eradicate the *cryptosporidium* infection<sup>[19]</sup>. Despite the patient's CD4 count, which remained the same, it was postulated that functional improvement by increase production of interferon gamma could eradicate *cryptosporidium* infection<sup>[19]</sup>.

## CONCLUSION

Any chronic illness, particularly those without known curative drugs, can produce disastrous sequel and may result in a deleterious psychological upset. Specific drugs should be used to treat AIDS patients with opportunistic infections such as cryptosporidiosis. When specific drugs are not present or due to lack of compliance or tolerability of the patient for such drugs, a great deal of attention should be given for improving his nutritional, psychological and immunological condition, which can result in marked improvement and possibly clearance of the offending organism.

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