

## CASE REPORT

### CYTOMEGALOVIRUS AND CRYPTOSPORIDIUM INFECTIONS IN AIDS : A NECROPSY STUDY

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**Abstract.** A case of coinfection of cytomegalovirus (CMV) and *Cryptosporidium* in an AIDS patient is reported. Chronic diarrhea was the presenting symptom. Etiologic agents were diagnosed only at postmortem evaluation. CMV intranuclear inclusions were seen in the terminal ileum, colon and vermiform appendix. *Cryptosporidium* oocysts were also present in the intestinal brush border of the colon. Improvement of diagnostic procedures such as colonic biopsy and the use of appropriate staining procedure for AIDS patients with diarrhea can help identify the cause of illness.

The emergence of human immunodeficiency virus in 1987 has been followed by a growing interest in both clinical and social aspects. The resulting disease, acquired immunodeficiency syndrome (AIDS) is fatal especially following a superimposed opportunistic infection. Early diagnosis can lead to more immediate and effective treatment. However, many infections remain unrecognized. Here, we report an interesting AIDS case with a clinically unrecognized opportunistic infection.

A 34 year old married female laborer presented with chronic diarrhea for 3 weeks and weight loss for one month. She has been aware of her seropositivity for HIV testing for 10 days prior to presentation. Physical examination revealed a cachectic lady, with a body temperature of 37°C and a blood pressure of 90/60 mmHg. A complete blood count showed WBC 3,400, neutrophils 95%, band form 3%, lymphocytes 1%, monocytes 1%, hemoglobin 11.8 g/dl, platelet 374,000 / $\mu$ l, red blood cell count  $3.40 \times 10^6$  / $\mu$ l. Pertinent blood chemistry revealed increase in total and direct bilirubin (29.4  $\mu$ mol/l and 10.0  $\mu$ mol/l respectively) and slight increases in aspartate transaminase (60U/l) and alkaline phosphatase (144U/l). There was no record of stool examination. The initial diagnosis was chronic diarrhea, possibly due to *Cryptosporidium*. In the ward,

her condition deteriorated quickly and she expired after 7 days. Upon death, she was diagnosed with septicemia.

Necropsy was performed in an attempt to find the cause of death. Gross anatomy revealed neither skin lesion nor surgical wounds. Limited necropsy was possible for the heart, lungs, liver, spleen, pancreas, kidney, adrenal gland, stomach, intestines and lymph nodes. Brain biopsy did not give a satisfactory yield for tissue analysis.

Histopathologic findings of the terminal ileum revealed atrophy and necrosis of the intestinal villi. Inflammatory response was very minimal. Upon careful examination of the tissue sections, several cytomegalic inclusions were seen in the terminal ileum, colon and vermiform appendix. These inclusions of viral particles primarily affected the endothelium, although inclusions within the intestinal villi were also noted. The typical reddish intranuclear inclusion of viral particles with distinct perinuclear halo are features of CMV (Fig 1).

*Cryptosporidium*, a coccidian organism, was also seen attached to the intestinal brush border. They are small, round (approximately 1-2  $\mu$ m) and stained light blue with hematoxylin and eosin stain (Fig 2). Intestinal necrosis was noted within the areas of *Cryptosporidium*. Both CMV and *Cryptosporidium* were not seen in other organs.

Cytomegalovirus is the most common opportunistic infection of the colon. The disease can involve any part of the gastrointestinal tract from the

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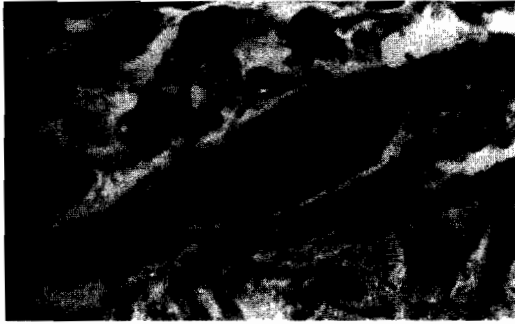


Fig 1—Cytomegalovirus inclusion in the muscle of large intestine. Note the typical reddish intranuclear inclusion of viral particles with distinct perinuclear halo. Hematoxylin and eosin stain 1,000x.

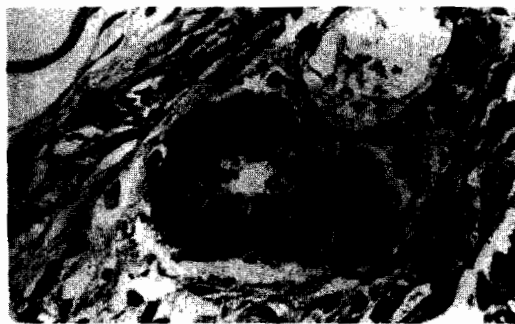


Fig 2—*Cryptosporidium* oocysts (arrow) attach to the intestinal brush border. Hematoxylin and eosin stain 400x.

esophagus to the colon. The disease is reported to be as high as 37.3% in AIDS patients (Cotte *et al*, 1993). CMV is usually a late complication of AIDS occurring when CD 4 cell counts are markedly depleted. If not properly diagnosed, disseminated CMV can occur.

*Cryptosporidium* on the other hand, is a major cause of chronic diarrhea in AIDS. Series of studies show that *Cryptosporidium* is a cause of AIDS related chronic diarrhea in 3.8% (Sorvillo *et al*, 1994) -37.3% (Cotte *et al*, 1993). In Thailand,

*Cryptosporidium* was detected in HIV infected patients to be 8.8 % (Moolasart *et al*, 1995).

The presenting patient had AIDS as defined by the center of disease control (CDC) criteria. She has chronic diarrhea of unrecognized etiology, hence proper treatment was not instituted. *Cryptosporidium* is not visible with routine examination. If clinically suspected, a request for modified acid fast bacilli stain may be helpful. In Thailand, the organism is not well recognized. Medical doctors and technicians need to be aware of the existence of such organism for proper treatment which can prolong patient's life.

If both organisms were identified clinically, CMV can be treated with ganciclovir or foscarnet and the symptoms caused by *Cryptosporidium* can be ameliorated with paramomycin. This case stresses the importance of precise diagnosis.

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