CRYPTOSPORIDIOSIS IN A CASE OF CELIAC DISEASE

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INTRODUCTION

Cryptosporidium is a coccidian protozoan parasite which causes cryptosporidiosis in the humans. Four species of cryptosporidium are pathogenic to humans of which Cryptosporidium parvum is the most common. Cryptosporidiosis accounts for more than 6% of all diarrhoeal diseases, mostly in children [1, 2]. A recent study from Karachi has reported the frequency of cryptosporidiosis in children at 1.7% [3]. It infects both the immunocompetent as well as immunocompromised hosts. Humans are infected when they ingest cryptosporidium oocysts. Transmission can be person-to-person, zoonotic or water-borne. The intestinal tract is the principal site of infection. Although pathogenesis of cryptosporidiosis is not well understood, impaired intestinal absorption with increased secretion into the gut lumen is seen. Impairment in both humoral and cell-mediated immunity is involved. The entire life cycle of the parasite occurs in a single host and the oocysts are excreted in fully infective form. Cryptosporidium oocysts are resistant to most disinfectants including aldehydes and halogens [1,2]. The disease is usually characterized by prolonged diarrhoea especially in the immunocompromised and malnourished. It is important to be aware of this complication in these patients. As our case shows, while diagnosis of cryptosporidiosis is easy, routine stool examination does not detect the cryptosporidium oocysts. Specific request must be made to the laboratory for tests for cryptosporidium.

CASE REPORT

A 10 years old boy was admitted to a private hospital in Rawalpindi in July 2003 with history of chronic, often severe diarrhoea for the last five years. The diarrhoea was usually triggered after intake of food. Two years earlier he had been diagnosed as a case of celiac disease and put on gluten-free diet. Although, his condition improved appreciably; six months later diarrhoea recurred. The child was seen by several doctors and received treatment for malaria and tuberculosis on clinical suspicion. A battery of laboratory investigations including repeated stool examinations and cultures were done but the cause of diarrhoea could not be ascertained. His condition deteriorated progressively as the severity of diarrhoea increased.

At the time of admission to the hospital, he appeared pale, emaciated and pot-bellied, and had marked splenomegaly. He was passing 6-8 large volume watery stools per day. His complete blood picture revealed haemoglobin concentration of 6.1 g/dL, total leukocyte count of 6.5X109/L and platelet count of 295X109/L. Malarial parasite was not seen on examination of thin and thick smears of peripheral blood. Routine examinations of urine and stool did not reveal any abnormality. Chest radiographs were normal. Upper GI endoscopy was performed and duodenal biopsy taken along with duodenal fluid for microscopy. Histopathologic examination of the biopsy showed villous atrophy with lymphocytic infiltration in the lamina propria, while microscopic examination of the duodenal fluid smear after modified Ziehl-Neelsen (ZN) acid-fast staining [4] showed oocysts of cryptosporidium. The oocysts were also seen on subsequent microscopic examination of faecal smear after modified ZN staining.

The patient was administered oral metronidazole in a dose of 30mg/kg body weight every eight hours for ten days along with iron and vitamin supplements. His diarrhoea soon subsided and he was discharged from the hospital with advice to continue gluten-free diet. The patient has made remarkable recovery and on follow up three months later he was found healthy, active and symptom-free. Microscopic examination of three stool specimens by the modified ZN staining technique did not reveal oocysts of cryptosporidium.

DISCUSSION

Cryptosporidium is an emerging pathogen worldwide. Up to 10 % of the general population

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may be infected with the parasite. While the disease in the immunocompetent host is usually mild or asymptomatic; in the immunocompromised it can cause profuse and persistent diarrhoea [1]. It is often associated with malnourishment in children in the developing world. Cryptosporidiosis is a serious complication of bone marrow and solid organ transplantation, immunosuppressive therapy and the Acquired Immunodeficiency Syndrome (AIDS) [2]. Saredi and Bava have reported an association of cryptosporidiosis with celiac disease [5]. The immunocompromised status of patients of celiac disease makes them easy targets of the parasite. Since both the diseases have similar clinical presentations, diagnosis of cryptosporidiosis can be missed.

Cryptosporidiosis can easily be diagnosed by microscopic examination of stool specimen using the modified ZN staining technique. Recently introduced immunofluorescent assays and antigen-capture enzyme immunoassays have improved the sensitivity and specificity of the technique [1,2]. The Polymerase Chain Reaction (PCR) is very useful in detecting the pathogen, especially during asymptomatic periods [1,6]. Cryptosporidium was first identified as a human pathogen on examination of intestinal biopsy. However, due to the patchy nature of infection, diagnosis can be missed by this technique [1]. There is no effective treatment for the disease although many drugs including metronidazole, azithromycin and paromomycin have been used with varying degrees of success [1,7]. Early trials with nitazoxanide, a newly introduced broad-spectrum antimicrobial have shown promising results [8]. Other studies have suggested that immunocompromised patients of cryptosporidiosis with severe diarrhoea, especially children may benefit from institution of early therapy [7,9].

Cryptosporidiosis can be a particularly distressing and potentially life threatening disease in the immunocompromised. In cases of celiac disease and other conditions causing chronic diarrhoea, the possibility of concomitant cryptosporidiosis should be kept in mind and appropriate laboratory investigations requested. Delay in diagnosis would not only lead to delay in institution of treatment but also wastage of resources on unnecessary tests and medications.

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