CASE REPORT

Resolution of cryptosporidiosis with probiotic treatment

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Cryptosporidium infection is usually self limited, but can be a life threatening illness in immunocompromised patients. Probiotics have been used successfully in the treatment of acute diarrhoea and they have also been shown to limit *Cryptosporidium parvum* infection in animal models. The first case of successful resolution of prolonged cryptosporidiosis with probiotic treatment is reported.

Cryptosporidium infection usually causes a self limited diarrhoeal illness lasting between two and four weeks but can be life threatening in immunocompromised patients.

Other than rehydration and correction of electrolyte abnormalities, definitive therapy has not been established. Paromomycin, azithromycin, or nitazoxanide may be beneficial for some patients and in immunocompromised patients orally administered human serum immunoglobulin has been beneficial.[1] Probiotics have been used successfully in the treatment of acute diarrhoea[2] and also in preventing antibiotic induced diarrhoea.[3] They have also been shown to limit *Cryptosporidium parvum* infection in immunocompromised individuals in animal models.[4–6]

We report the first case of successful resolution of prolonged cryptosporidiosis with probiotic treatment.

CASE REPORT

A 12 year old girl of previous good health had been diagnosed with coeliac disease at 9 years of age after an 18 month history of vomiting, loose stools, and mouth ulcers. At diagnosis she had positive antigliadin and antiendomysial antibodies with a normal IgA level and a positive small bowel biopsy. On a gluten-free diet she was completely asymptomatic for 25 months.

At 12 years and 2 months of age she presented with a four month history of abdominal pain, flatulence, loose stools, nausea, and lethargy. Her abdominal pain had been severe enough to stop her school attendance for the preceding two months. Her growth had been maintained along the 25th centile and apart from slight epigastric tenderness her examination was entirely normal.

Laboratory data revealed a normal full blood count and erythrocyte sedimentation rate, negative *Helicobacter pylori* serology, and normal antitissue-transglutaminase levels. An initial stool sample sent from the general practitioner after a month of symptoms was negative for cryptosporidium. A further stool sample sent four months into her diarrhoeal illness revealed cryptosporidium oocysts but no other pathogens.

In view of the benefits of probiotics in infectious diarrhoea she was started on a four week course of *Lactobacillus* GG 10^9 units/day (Culturelle, CAG Functional Foods, Omaha, USA) and *Lactobacillus casei* Shirota 6.5×10^9 units/day (Yakult UK Ltd, London, UK) treatment. Within 10 days of starting treatment her nausea and diarrhoea had completely resolved and her abdominal pain markedly reduced, enabling her to return to school.

A repeat stool sample four weeks after starting treatment with probiotics was clear of cryptosporidium oocysts.

DISCUSSION

The most fully documented beneficial effect of probiotic intervention is the treatment of acute infectious diarrhoea. Well controlled clinical studies have shown that probiotics such as *Lactobacillus rhamnosus GG*, *L reuteri, L casei* Shirota, and *Bifidobacterium lactis* can shorten the duration of acute rotavirus diarrhoea.[7 8] Research in immunodeficient mice has also suggested that treatment with probiotics can reduce the parasite burden in the intestinal epithelium during cryptosporidiosis.[4–6]

The natural course of cryptosporidiosis is to resolve over two to four weeks in immunocompetent patients. Our patient had no other signs or symptoms of immunodeficiency and a normal serum IgA level. We are unaware of any research to suggest altered susceptibility to cryptosporidiosis in persons with coeliac disease.

Despite the longevity of her symptoms (four months), within 10 days of starting treatment with probiotics her persistent diarrhoea, abdominal pain, and school absence resolved.

The initial stool sample sent at the onset of symptoms was probably falsely negative due to either intermittent shedding of oocysts or failure of the routine laboratory examination to detect the oocysts.[1]

We believe this is the first case where probiotics have been successfully used to treat cryptosporidiosis in humans resulting in a prompt clinical improvement and resolution of infection. This benign treatment holds therapeutic promise.

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