

Case Report

PULMONARY CRYPTOSPORIDIOSIS IN HIV NEGATIVE PATIENT-A RARE CASE REPORT

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ABSTRACT

Human cryptosporidiosis is better known as an intestinal disease both in immunocompetent and immunocompromised persons. Little information exists, however, on human pulmonary disease caused by *Cryptosporidium* species, which reflects either the low prevalence of pulmonary cryptosporidiosis or the lack of testing in immunocompetent hosts. However, some reports of pulmonary cryptosporidiosis, have been mentioned in literature in immunocompromised individuals. We are reporting a rare case of pulmonary cryptosporidiosis in immunocompetent, HIV negative patient who has no evidence of primary immunodeficiency. Simultaneous gastrointestinal involvement with *Cryptosporidium species* was observed.

Keywords: Cryptosporidiosis, Oocyst, Stool, HIV, Immunocompromised Host

INTRODUCTION

Cryptosporidium organisms, which are intestinal protozoa, are a well known cause of enteritis in immunocompetent and immunodeficient individuals (Cama *et al.*, 2008). They are transmitted through water or food contaminated by oocysts or spores of parasite. The species most frequently involved in human infections are both *cryptosporidium hominis* and *cryptosporidium parvum*. The first reported case of cryptosporidiosis in human was in 1976 and since then it has been recognized as one of the common cause of waterborne disease in human beings (Nime *et al.*, 1976). Extra-intestinal involvement with *cryptosporidium* has been reported in AIDS patients (Clavel *et al.*, 1996; Pellicelli *et al.*, 1998; Palmieri *et al.*, 2005). Pulmonary or respiratory cryptosporidiosis is a rare complication of intestinal infection. There is one case report of respiratory cryptosporidiosis in immunosuppressed individual other than HIV-related disease in India (Shrikhande *et al.*, 2009). However no case reports are available from India in immunocompetent adult patients till date. We are reporting a case of Pulmonary Cryptosporidiosis in immunocompetent adult patient simultaneously having Intestinal Cryptosporidiosis.

CASES

A 35 yr. old male was admitted in medicine department of our Hospital with history of high grade fever with chills and rigor and cough with expectoration since 5 days. History of mild dyspnea was present. After admission patient complained of nausea, vomiting, abdominal discomfort and three episodes of watery diarrhea. Patient was from a rural background. There was no past history of such complaint and no history of Diabetes mellitus or steroid intake or Hypertension. On examination he was moderately dehydrated and febrile. Tachycardia was present (106 beats per min) respiratory rate was 18/minute, and BP was 104/70 mm Hg. Oxygen saturation on room air was 98%. On chest examination crepitation in right lower zone were found on auscultation. No other finding was observed on systemic examination. Patient was subjected for routine investigations which were found normal. Patient was negative for malaria and dengue serology. HIV testing was also negative. Blood sugar, blood urea, S.bilirubin, SGOT and SGPT was within normal limits. Lipid profile was normal. Although slight leucocytosis was present (WBC count - 12500/ cu mm). USG Abdomen was normal. However Chest X ray revealed right lower lobe homogenous opacity suggestive of consolidation. Patient's sputum was sent to microbiology laboratory for microbiological diagnosis. Smears stained with Gram's staining, Ziehl Neelsen (Z.N) staining, and KOH mount were examined for the presence of bacteria, fungus, Mycobacteria and Nocardia. Sputum sample was inoculated on sheep blood agar, chocolate agar, Sabouraud's dextrose agar

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and Lowenstein Jensen medium. One smear on Z.N.Staining shown 4-6 μm size, acid-fast, spherical oocyst. Cryptosporidium were suspected and smears were again prepared and stained by Kinyon's method (Parija, 2006). Smears shown same picture with some clarity. Patient was requested for repeat sputum sample along with stool sample for confirmation of diagnosis. Sputum and stool sample both were subjected for Kinyon's Staining and they were again found positive for acid fast oocyst of *Cryptosporidium*. No pathogenic bacteria were grown on chocolate or blood agar. *Mycobacterium tuberculosis* was also not grown. Microscopic examination and culture of sputum were negative for fungal elements. No other pathogen was detected in patient sputum and stool. To rule out any primary immunodeficiency the patient blood was tested for CD4 count and IgM, IgG and IgA antibody. CD4 count was 654/ μl and immunoglobulin levels were normal. Patient was started Nitazoxanide 500 mg orally BD for 3 days along with IV fluids and antipyretic drugs. After completion of therapy patient was symptomatically all right and stool and sputum were taken again and found negative for parasite.

DISCUSSION

Cryptosporidium species is known to cause self limiting diarrhea in immunocompetent and intractable diarrhea in patients with acquired immunodeficiency syndrome (Mahdi and Ali, 2004). There are few reports of pulmonary infection with cryptosporidium in HIV positive patients and also in HIV negative children (Dupont *et al.*, 1996; Siobhan *et al.*, 2010).

The major symptoms in pulmonary Cryptosporidiosis are chronic cough, dyspnea and fever. In most of the reported cases of pulmonary cryptosporidiosis, diarrhea was an associated symptom and fever was of low grade (Shrikhande *et al.*, 2009; Siobhan *et al.*, 2010). In our case we have similar symptoms with short duration except high grade fever. The high grade fever in present case could be due to any concomitant infection which subsided after treatment.

In present case cysts of parasite were detected accidentally as the sputum was sent for Gram's and Z.N. Staining and apart from the acid-fast oocysts of *Cryptosporidium*, no other pathogenic organism was demonstrated by microscopy or culture examination. In absence of any other established pulmonary pathogen, *Cryptosporidium* was considered as an etiological agent for the pulmonary pathology.

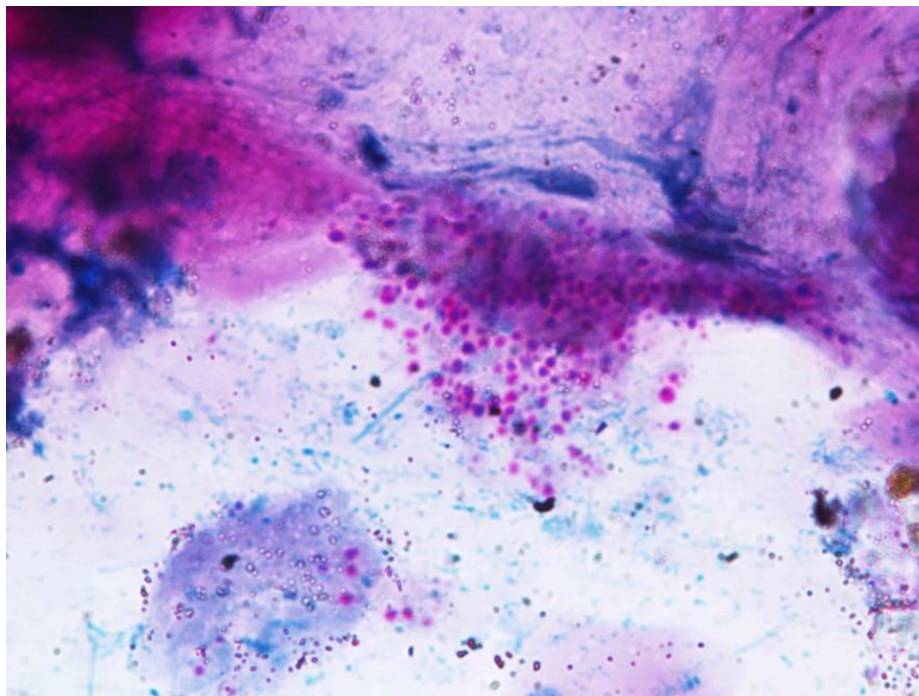


Figure 1: Sputum smear showing acid fast oocyst of cryptosporidia on Kinyon's Staining

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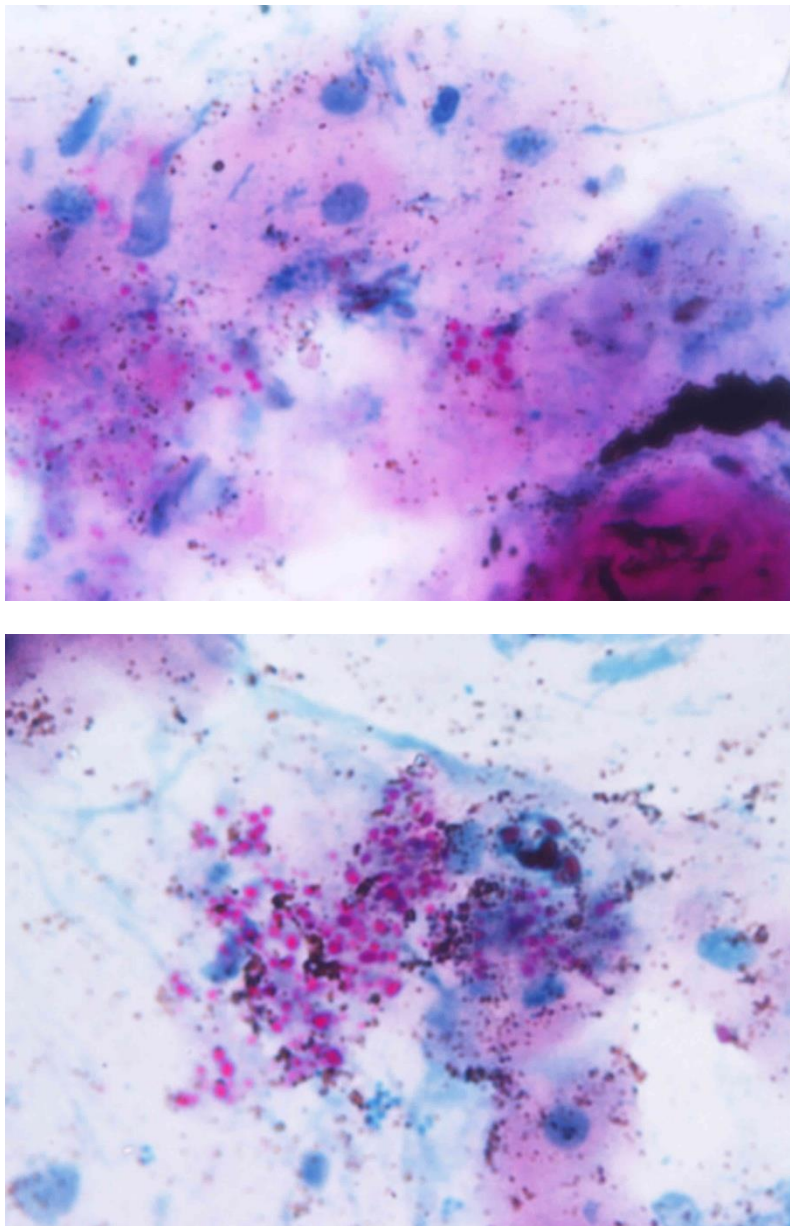


Figure 2: Stool smear showing acid fast oocyst of cryptosporidia on Kinyon's Staining

Resolution of symptoms and X ray finding and negative report of sputum and stool for *Cryptosporidium* cyst after treatment with Nitazoxanide further confirms our diagnosis.

The patient was not immunocompromised as his immunoglobulin levels as well as CD4 counts were normal. The patient was in defense services but before admission in hospital he was engaged in farming work with his father for quite some time. The possibility of pulmonary involvement may be due to inhalation of oocyst through contaminated soil and animals. Detection of parasites in sputum specimens suggests that respiratory transmission of *Cryptosporidium* may occur. Transmission to others could arise if oocyst are aerosolized or ejected during coughing, as occurs with many other pathogens (Dupont *et al.*, 1996).

Whenever sputum samples are found positive for *cryptosporidium* the stool samples should also be subjected for oocyst identification and the cyst can be identified in routine Z.N.Staining also. Thus

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pulmonary cryptosporidiosis should be considered as one of the differential diagnosis when patient with respiratory symptoms are being investigated.

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