CRYPTOSPORIDIUM IN DIARRHOEAL DISEASE

Pages with reference to book, From 174 To 175

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Although a large number of enteropathogens have been identified in recent years but the cause of many episodes of diarrhoea still remains undetermined. Cryptosporidium, a protozoan parasite is a well known aetiological agent of gastroenteritis in animals and has recently been shown to cause a similar illness in humans[1-4]. First described as a pathogen causing diarrhoea in animals in 1907, it was initially detected in the gastric mucosa of asymptomatic mice but was not associated with disease in animal until 1955 when diarrhoeal illness in turkeys was reported[5]. Subsequently Cryptosporidium was found to cause disease in calves, lambs, pigs and other domestic and wild animals[2,3]. The first ease of human infection was reported in 1976[6] and only 7, additional cases documented until 1982. Since then the number of identified cases has increased because of recognition of severe form of infection in patients with AIDS and because of rapid and convenient screening methods. [7-10] Previously intestinal biopsy was necessary for diagnosis but later this pathogen was isolated in faecal samples and therefore more cases were documented. Cryptosporidium infection occurs in all ages but more in infants and children[11,12]. The illness occurs both in immunocompromised and immunocompetent patients. The immune status affects the manifestation of the disease. It presents either as a self-limiting gastroenteritis[10] in an otherwise normal person who presents with a foul smelling diarrhoea mixed with mucus but without blood, accompanied sometimes by abdominal pain and vomiting[10,13]. Fever, nausea, anorexia, weight loss, cough, mild to moderate dehydration also occurs[12,14]. Chronic life threatening diarrhoea can also occur which is watery and continues intermittently or continuously for many months. Patients generally continue to excrete oocyst for days after resolution of diarrhoea making faecal examination for Cryptoporidium worthwhile even if diarrhoea has resolved as the excretion of oocyst is not intermittent[15]. There is a marked seasonal variation of Cryptosporidium in immunocompetent patients with infection being considerably more common in summer and autumn. [2,7,10]. A sudden increase in the cases of Cryptosporidium occurs during hot humid weather[16], but the reason for this seasonal variation is not known. [7] Cluster of cases of Cryptosporidium also occur during late winter and spring[13]. Association of Cryptosporidium with other enteric pathogens and giardia lamblia is significant[17,18]. Extraintestinal presence of Cryptosporidium also occurs and the organism was detected in the sputum of a patient with AIDS and intestinal Cryptosporidiosis[19]. Transmission of infection is mainly through faecal oral route and person to person transmission[9,20]. Day care centres, preschool infants and children play an important part in the transmission of infection in children and their families[7]. Introduction of liquid or solid food in the diet, absence of toilet facilities and deficient nutritional status may play a role in spread of disease. [21] Bottle feeding and over crowding are other risk factors[22]. Infection also spreads via animals as pets or domestic animals[9,21]. Animal to human transmission occurs in families who keep their poultry and cattle within the premises. The oocyst excreted by these animals are inhaled or swallowed by man facilitating its entry into the gastrointestinal tract. [16]. Raw milk, sausages and environmental source also play some role in its transmission[23]. Cryptosporidium should be included, in the differential diagnosis of traveller's diarrhoea. The infection might be caused by eating or drinking contaminated food or water[24-26]. Several methods of diagnosis are used for the detection of Cryptosporidium. The parasite can be seen either in endogenous stage in situ on intestinal mucosa obtained by biopsy or at necropsy or more commonly by the presence of oocyst in faeces. Although an iodine wet mount may lead to a preresumptive diagnosis but a modified

kinyoun acid fast stain of faecal samples is the currently accepted method for identifying the oocyst. Other method of staining are auramine and modified Ziel Nelson stain[13], methylene blue stain and 1% safranin stain which is simple and rapid[18]. Concentration of oocyst can be performed in selected cases and the failure to detect this pathogen is most often related to inexperience in performing the diagnostic tests or to improper staining technique. Oocyst can be identified by phase contrast microscopy or by combined fluorescence and' negative stain in which oocyst of Cryptosporidium are stained with phenol auramine and examined under oil immersion 'and an incident light fluorescence microscope[27]. Thin section Electron Microscopy also provides definitive identification[15]. Serological study may prove to be useful in establishing the diagnosis in selected cases particularly in cases of protracted illness. Prevention of Cryptosporidium can' be accomplished by considering Cryptosporidium as a cause of diarrhoea. Once the population in which the 'infection is common is defined, characterization of the disease will be possible. Studies will help to define the clinical spectrum of the disease and establish guidelines for therapy. Epidemiology of the infection should be explained to determine thó major reservoir and modes of transmission and the possibility of influencing the spread of organism. In order to control the spread, Cryptosporidium should be looked for in diarrhoea cases in day care centres, in diarrhoea associated with animal contact, in persons with probable or confirmed AIDS. Cryptosporidium will ultimately be found to be responsible for a large number of cases of acute diarrhoea that are currently undiagnosed[28]. Therapy of Cryptosporidium is supportive. Many chemotherapeutic agents have been tried but none found effective. Initial intriguing results were obtained when the antibiotic Spiramycin (similar to Erythromycin) was used to treat the infection in patients with AIDS but therapy with drug seems to merit further investigation[7,29]. In immunocompetent persons the illness is generally self limiting. Titatment with antimicrobial drugs is not indicated and does not appear to be useful. As this parasite is being reported from Western countries[7], Nigeria[30], Sudan[31], Sri Lanka[32], Bangladesh[16], India[33], a study is being conducted at PMRC Research Centre, Karachi to determine whether Cryptosporidium is present in our population. As diagnosis is possible with staining technique by kinyoun method, routine examination for Cryptosporidium might reveal the causative agent in those faeèal samples in which no pathogen is found.

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