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Cyclospora cayetanensis in a Child with Acute Lymphoid Leukemia Type B: About a Case

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Abstract: *Cyclospora cayetanensis* is a protozoan responsible for cyclosporosis, it is a digestive coccidiosis in the tropical and intertropical area. The human being constitutes the only reservoir and his transmission is related to the fecal content based on the ingestion of water and / or food contaminated by infectious oocysts. This infection is mainly responsible for watery diarrhea which can be severe in immunocompromised patients. We report a case of a little girl with acute lymphoid leukemia type B in whom we diagnosed a digestive infection with *Cyclospora cayetanensis*.

Keywords: *Cyclospora cayetanensis*, cyclosporosis, digestive coccidiosis

INTRODUCTION

Cyclospora cayetanensis is a protozoan responsible for cyclosporosis, it is a digestive coccidiosis in the tropical and intertropical area. The human being constitutes the only reservoir and his transmission is related to the fecal content based on the ingestion of water and / or food contaminated by infectious oocysts.

This infection is mainly responsible for watery diarrhea which can be severe in immunocompromised patients. We report a case of a little girl with acute lymphoid leukemia type B in whom we diagnosed a digestive infection with *Cyclospora cayetanensis*.

OBSERVATIONS

A 3-year-old female, Followed by the pediatrics department of the university hospital Hassan II Fes for LAL type B reclassified high risk with neurological involvement.

She Received treatment according to the MARALL 2006 protocol. (il faut rapport c quoi le protocol)

The patient was admitted in the pediatric emergencies for febrile neutropenia with greenish fluid diarrhea with 3 to 4 stools per day accompanied with vomiting, asthenia and anorexia.

The clinical examination found a slightly dehydrated child (dry mucous membranes) with a grade 1 mucositis in the review of otolaryngology and an anal margin.

The blood test revealed neutropenia at 110 / ul (GB = 380 / ul) and CRP at 178mg / l. The Parasitological examination of stools supplemented by Richie concentration and the modified Ziehl Neelsen stain showed red pink oocysts (figure 1) on a green background with a rounded shape and a diameter of 8 to 9 µm, Within these oocysts there are refractive globular inclusions, the diagnosis of cyclospora cayentanesis was made.

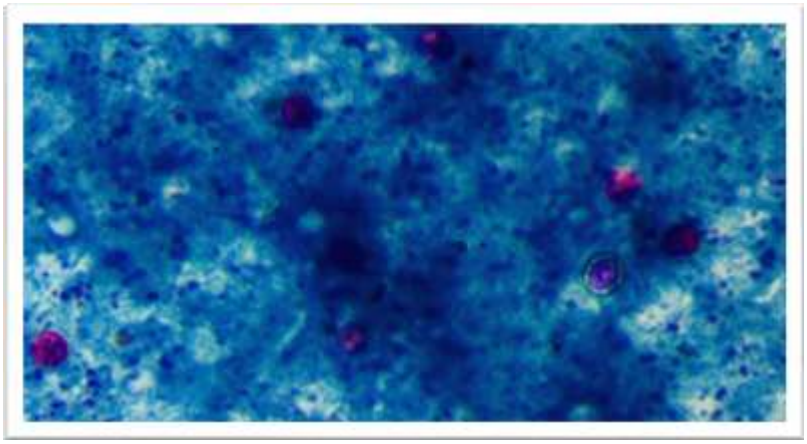

Fig-1: Pink oocysts on a green background with a rounded shape and a diameter of 8 to 9 µm

The child was treated by Triméthoprim-sulfaméthoxazole. The evolution was good with obtaining of apyrexia and regression of diarrhea, The biological balance also had an improvement with a regression of neutropenia becoming 1210 / ul (GB = 2890 / ul) and CRP = 4mg / l.

DISCUSSION

C. cayetanensis is an obligate intracellular protozoan parasite. It belongs to the class of Sporozoea, to the phylum of the Apicomplexa, to the subclass of the Coccidiasina, and to the family of the Emeriidae [1].

Most cases of *Cyclospora cayetanensis* have been reported in travelers and in endemic areas (Haiti, Guatemala, Peru, Nepal and also the United States, Central America, Southern Asia and Eastern Europe [2, 3] there is little data on the prevalence of C. cayetanensis in the African continent [4].

It is a coccidia that is recognized as a chronic diarrhea agent in patients infected with the human immunodeficiency virus (HIV) [5] but also reported in renal transplants in Europe and Poland [6].

Young children and old people are most at risk [7], it is an intracellular parasite whose biological cycle is monoxene [8, 9], which begins with the ingestion of a sporulated oocyst which has matured in the external environment, the inoculated oocyst contains 2 sporocysts, each one contain 2 infective sporozoites, the latter are released into the intestinal lumen under the effect of the digestive juice,

In the small intestine the sporozoites enter in the enterocytes, where an asexual multiplication gives the type 1 and 2 of merontes these may evolve towards a sexual stage and give male gametes (microgametogony) or female gametes (macrogametogony), the fusion of the gametes gives rise to an immature oocyst of 8 to 10 µm of diameter which will be excreted in the stool.

The oocysts emitted in the external environment are very resistant and can probably persist for several months or years depending on the environmental conditions [10] and in a temperature between 23°c and 27°c, the oocyst will acquire a maturation which is thus sporulated with an infectious power.

The reservoir of this parasitosis appears to be strictly human with fecal-oral transmission by water and vegetation contaminated by oocysts present in human faeces. The risk of direct human-to-human transmission or self-infestation does not exist [7].

The infective dose, although poorly known, is probably very low, in the order of 10 to 100 oocysts [11]. After a short incubation period of five to seven days on average, and wich can vary from two days to several weeks, the symptomatology is manifested by liquid diarrhea without mucus or blood arriving up to 10 stools per day.

The remaining symptoms occur after abdominal pain, asthenia, nausea vomiting, the fever being inconstant and generally moderate, hypereosinophilia is also absent, the discovery of hypereosinophilia in a patient returning from a trip to the tropical zone must raise another etiology, including parasitic [12].

The diagnosis of cyclosporosis is based on the parasitological examination of the stools to research oocysts, the clinician must mention at his request the search for C. cayetanensis.

Since the number of oocysts is generally low in faeces, a concentration of these is essential before performing the Ziehl Neelsen staining being the most used as the oocysts are not stained by lugol, MIF (merthiolate-iodine-formaldehyde), Giemsa, Gram, hematoxylin eosin, methylene blue, trichrome, silver impregnation or periodic acid Schiff [7, 13].

The oocysts then appear pink from 8 to 10 m in diameter, which is greater than that of Cryptosporidium spp oocysts on a green background (4 to 6 m). Modified safranin staining with microwave heating should be preferred if the modified Neelsen zeihl is inconclusive.

Cyclosporosis can heal within a few days in the immunocompetent, in immunodepressed patients, it may be severe and may have complications such as dehydration with weight loss or extra-digestive localization [7, 14].

Cholecystitis [15, 16] Guillain-Barré syndromes [17] and Rei-ter syndromes [18, 19] have been reported in the literature but remain rare. The parasitological diagnosis is in this case an emergency to put in place an adapted treatment based on a combination of trimethoprim-sulfamethoxazole (or cotrimoxa-zole) per os with a dose of two to four tablets per day (160-800 mg) for seven to ten days in adults [11], with a relapse with ciprofloxacin 500 mg morning and evening for seven days is recommended if trimethoprim-sulfamethoxazole fails or sulfamide allergy [20].

To prevent intestinal parasitosis, the faecal peril must be controlled and the simple hygienic and dietary rules must be followed.

CONCLUSION

Clinician-biologist collaboration is a key for the diagnosis of this infection because the research of C. cayetanensis in the laboratory requires the application of specific techniques.

Food hygiene and monitoring of water systems are an important part of the strategy for individual and collective prevention of this parasitosis.

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