

Epidemiological profile of opportunistic intestinal protozooses in the laboratory of parasitology-mycology of the CHU Hassan II of Fez (5 years duration)

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Abstract :

Opportunistic intestinal parasitoses are infections occurring in patients with deep immune deficiency and indicating a particular susceptibility of the host. We did a retrospective study on parasitological samples from stool sent to the parasitology and mycology laboratory of the Hassan II University Hospital in Fez over a period of 5 years from 11/01/2015 to 01/01/2021. Each patient having undergone a parasitological examination of the stool supplemented by a modified Ziehl-Neelsen stain. Of the 3963 stool samples examined, 19 objectified coccidia, i.e. an overall prevalence of 0.47%. Cryptosporidium spp represented 73.68% and Cyclospora cayetanensis 42.10%. Human immunodeficiency virus infection was an important risk factor for acquiring intestinal parasitic infection such as Cryptosporidium.

Key words : *Cryptosporidium spp, Cyclospora cayetanensis, modified Ziehl-Neelsen stain, HIV.*

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I. Introduction :

Opportunistic intestinal parasitosis are infections occurring in patients with immune deficiency and reflecting a particular susceptibility of the host [1].

These are intestinal protozoic infections with obligatory intracellular development represented by coccidia: Cryptosporidium sp, Cyclospora sp, Isospora Belli and microsporidia, responsible for digestive infections, most often mild acute diarrhea in immunocompetent patients, and chronic diarrhea that can threaten the vital prognosis in immunocompromised patients.

Several of these parasitoses are of recent knowledge in humans, either because they have been revealed by their severity or frequency with the epidemic of acquired immunodeficiency syndrome (AIDS), or because their identification requires specific techniques that are not routinely practiced in the laboratory.

The aim of our study is to report on the epidemiological profile of opportunistic intestinal parasitosis in patients who underwent parasitological examination of stools at the Hassan II University Hospital of Fez.

II. Materials :

This is a retrospective study of parasitological stool samples (EPS) sent to the laboratory of parasitology and mycology of the Hassan II University Hospital of Fez over a period of 5 years from 01/11/2015 to 01/01/2021.

The data collection is made from the results of the PES which were noted in the stool parasitology register of the laboratory service. This register includes patient identification (last name, first name, sex) and information regarding patient origin (inpatient or outpatient) and microscopic examination. In accordance with most studies, subjects younger than 15 years of age were considered children.

Each sample was examined macroscopically for color, consistency, presence of blood or mucus, non-fecal elements, or adult eggs or parasites. A direct microscopic examination, between slide and slide, after dilution in physiological water on freshly passed stools and staining with Lugol's. Rapid tests (Cryptosporidium, Entamoeba histolytica and Giardia intestinalis) were performed with kits using an immunochromatographic technique. A modified Ziehl-Neelsen stain was applied.

III. Results :

From November 1, 2015 to January 1, 2021, Of 3963 stool samples examined, 19 objectified coccidia after modified Ziehl-Neelsen staining for an overall prevalence of 0.47%.

The mean age of the patients was 34.94 years with extremes ranging from 1 year to 69 years. Children represented 21.05% of the positive samples.

Female gender was dominant with a percentage of 57.9% versus 42.1%, the sex ratio (M/F) was 0.72.

31.57% of the patients were not hospitalized, while 68.43% were hospitalized, of which 12.71% were hospitalized in the different departments of the Hassan II University Hospital of Fez (internal medicine department, nephrology, gastroenterology, dermatology, pediatrics) having presented an immunodepressive terrain.

The overall prevalence of our study was 0.47%, i.e. 19 cases of coccidia, 14 cases were positive for *Cryptosporidium* spp, i.e. 73.68%, and 8 cases positive for *Cyclospora cayetanensis*, i.e. 42.10%. Parasitic associations combining *Cryptosporidium* spp and *Cyclospora cayetanensis* were found in 3 cases, i.e. a percentage of 15.78% (Figure 1 and 2).

Coccidia found in our children were 3 cases of *Cryptosporidium* spp and only one case of *Cyclospora cayetanensis*, that is to say a percentage of 21.05%.

The different underlying pathologies found in the patients examined, which favored an immunodepressive environment, were mainly hematological malignancies with a percentage of 36.84%, including 5 cases of acute leukemia and 2 cases of Hodgkin's lymphoma. Chronic inflammatory bowel diseases were found in 15, 78% of the patients had inflammatory bowel diseases, including 2 cases of hemorrhagic rectocolitis and only one case of crohn's disease, 10.52% of the patients had renal pathologies, including one case of renal tumor and one case of chronic renal failure, and 5.26% of the patients had AIDS.

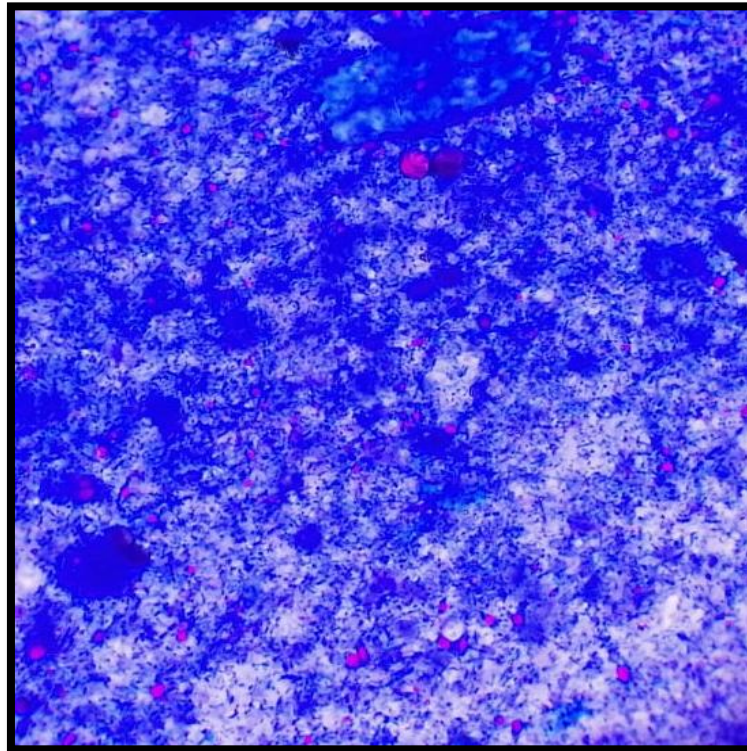


Figure 1: *Cryptosporidium* spp and *Cyclospora cayetanensis* oocysts in modified Ziehl-Neelsen stain under light microscope.

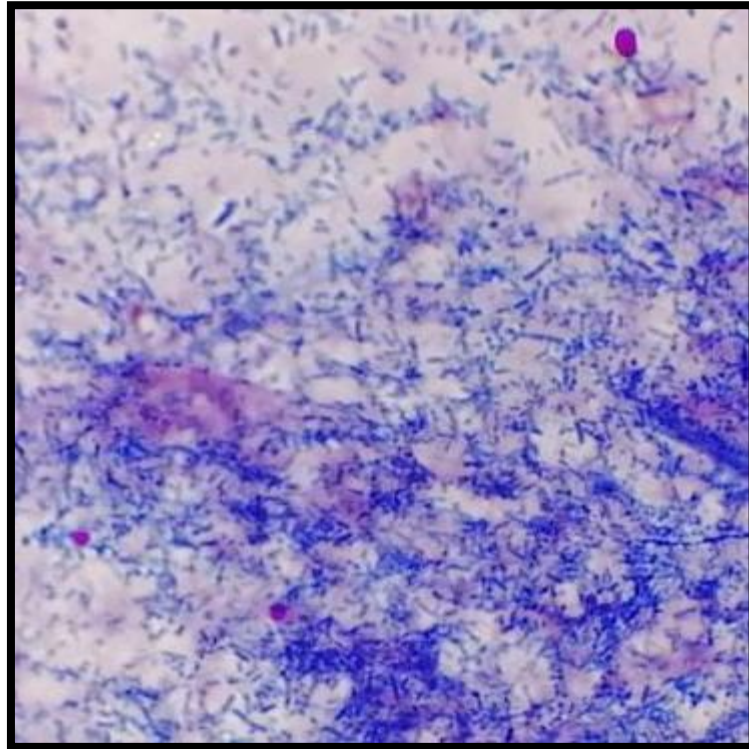


Figure 2: Oocysts of *Cryptosporidium* spp and *Cyclospora cayetanensis* in modified Ziehl-Neelsen stain under light microscope.

IV. Discussion :

Based on the results found in our study, we tried to make comparisons with the literature in different countries of the world.

Our study estimated a prevalence of 0.47% of the study population hosting at least one opportunistic intestinal parasite.

The overall prevalence of our study is comparable to that found in a study conducted in Sfax, Tunisia, which was estimated at 0.23%. The majority of cases were positive for *Cryptosporidium* spp as in our study, and one case of *Isospora belli* unlike in our study where we isolated cases of *Cyclospora cayetanensis* [2].

In the same study in Tunisia, *Cryptosporidium* spp was isolated in children, immunocompromised people and in particular in AIDS patients, which was also demonstrated in our study [2].

Outside the Maghreb, in a study carried out in Nigeria, *Cryptosporidium* spp and *Isospora belli* were the opportunistic parasites observed. In contrast, *Cryptosporidium* spp and *Cyclospora cayetanensis* were isolated in our country [3].

In the same study in Nigeria, human immunodeficiency virus (HIV) infection was a significant risk factor for intestinal parasitic infection where *Cryptosporidium* species were isolated only among HIV-infected individuals (22.2%) [4,5]. Similar results have been reported by a number of authors in Ethiopia, Malaysia, India and Europe [6, 7, 8, 9, 10, 11, 12]. This is also the case in our study where HIV was known in 5.26% of positive patients.

Cellular immunity is the main defense against intestinal parasitic infections [9]. The progressive decline and eventual collapse of immune system functions, which are characteristic of AIDS, usually result in morbidity and eventually death due to parasitic opportunistic infections such as *Cryptosporidium*, *Microsporidium*, *Cyclospora* and *Isospora belli* [13, 14].

In particular, cryptosporidiosis represents a considerable burden worldwide in immunocompromised individuals, especially those infected with HIV [15, 16, 17].

V. Conclusion :

Opportunistic intestinal parasitosis is a major complication of immunodepression, particularly among people infected with AIDS. Their knowledge must be deepened for a better management of patients.

Conflicts of interest :

The authors declare no conflict of interest.

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