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Evolution of parasitic diseases in a collectivity of HIV positive children

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ABSTRACT

Introduction: Intestinal parasitism represents an important problem of children health. Infestations with protozoa and helminths even have an increased incidence in children they weren't observed because they were asymptomatic and atypical but with negative influence on their health regardless their immune status.

Objective: To evaluate parasitic infections in a collectivity of 38 children HIV+ from Cernavoda city (Hospis "St. Laurence") over a period of 10 years (2002 - 2012).

Material and method: We performed two coproparasitologic examinations (in year 2002 – before antiretroviral treatment and in year 2012 – after 10 years of antiretroviral treatment) by concentration and staining methods and ELISA for *Cryptosporidium parvum* antigen.

Results: In our group of study the median age was 11.65 yrs. in 2002 and 20.6 yrs. in 2012. Sex ratio was M: F = 1:1.2. In year 2002 we found an incidence of parasitic disease of 94.9%, and in year 2012 we found an incidence of 26.31%. In year 2002 we found 6 cases of *Giardia intestinalis*, 5 cases of *Blastocystis hominis*, 15 cases of *Chilomastix mesnili*, 2 cases of *Entamoeba coli*, 1 case of *Ascaris lumbricoides*, 2 cases of *Hymenolepis nana* and 5 cases of poliparasitic disease. In year 2012 we found 4 cases of *Giardia intestinalis*, 2 cases of *Entamoeba coli*, 2 cases of *Blastocystis hominis* and one

case of *Isospora belli* and another one case of *Ascaris lumbricoides*.

Conclusions: After ten years of HAART the incidence of parasitic diseases registered an important decrease from 94.9% to 26.31%.

Keywords: parasitic diseases, HIV

Introduction

Intestinal parasitism is an important health issue in schoolchildren. Protozoa and helminths infestation, although an increased incidence among infant population are overlooked because, most often are asymptomatic or atypical, but negative influence on health regardless of immune status.

Most infections with *Ascaris lumbricoides*, *Giardia lamblia*, *Hymenolepis nana*, *Entamoeba coli*, *Blastocystis hominis* are asymptomatic, but sometimes moderate or major infections can cause gastrointestinal symptoms (diarrhea, flatulence, abdominal pain, nausea, vomiting) and sometimes can cause malnutrition [1,2,3,4,5,6]. *Isospora belli* infection and *Cryptosporidium parvum* in immunocompromised persons with HIV may develop chronic diarrhea leading to malnutrition, dehydration and even death [5,6]. Lung infections, biliary, or disseminated infections by *Cryptosporidium parvum* may occur in immunocompromised patients although this parasite infections are usually limited to the gastrointestinal tract [5].

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Objective

Evaluation of parasitic infection incidence in a community of 38 HIV + children in the city of Cernavoda (Hospis “St. Laurence”) over a period of 10 years.

Material and methods

Coproparasitological examinations were performed by direct methods, methods formalin-ether concentration method prepatului Ritchie and permanently colored stained using acid-modified (Garcia, 1983), acid-fast staining method Kinyoun's stain and modified Ziehl-Neelsen with malachite green and confirmation by ELISA immunoassay of *Cryptosporidium parvum* Ag.

The first examination was performed before the introduction of antiretroviral therapy and the second examination 10 years after the introduction of HAART.

Statistical analysis was performed by applying the t test. A p-value less than 0.05 represent a statistically significant difference.

Results

During the period April 2002 - February 2012 were examined clinically and subsequently investigated by coproparasitological exams, to detect intestinal parasites, 38 HIV + children and adolescents living in a community of children abandoned in hospice “St. Laurence” in Cernavoda. In our study group the average age was 11.65 years in 2002 and 21.6 years in 2012 Sex ratio was M: F = 1:1.2. In 2002

by the coproparasitological examination we found 6 cases of *Giardia intestinalis*, 5 cases of *Blastocystis hominis*, 15 cases of *Chilomastix Mesnil*, 2 cases of *Entamoeba coli*, 1 case of *Ascaris lumbricoides*, 2 cases of *Hymenolepis nana* and 5 cases of impaired poliparasitism (Figure 1). In 2002 the incidence of parasitic diseases in the community for children was 94.9%. *Chilomastix Mesnil* resides in the cecum and/or colon and it is generally considered a commensal whose contribution to pathogenesis is uncertain.

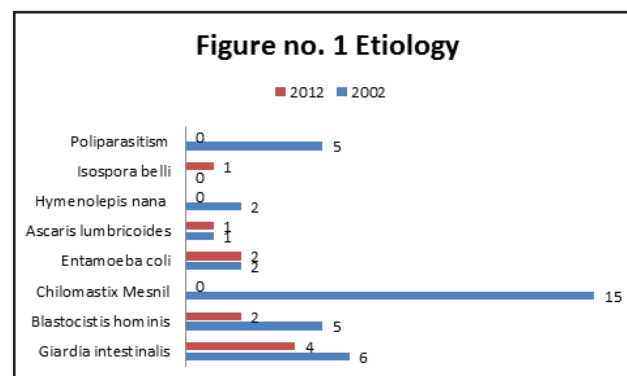


Figure 1 Etiology

In 2012 by the coproparasitological examination we found 4 cases of *Giardia intestinalis*, *Entamoeba coli* 2 cases, 2 cases of *Blastocystis hominis* and one case of *Isospora belli* and *Ascaris lumbricoides* respectively (Figure 1). In 2012 the incidence of parasitic diseases of same patients in this community was 26.31%. At the second examination there were no cases of poliparasitism.

By applying the t test were statistically significant differences in data processing. Therefore fewer pediatric patients with community poliparasitism in HIV positive children in Cernavoda present statistical significance ($p = 0.03$).

The difference between the two years studied regarding intestinal parasitism in the community of HIV + children also had statistical significance ($p = 0.0312$).

From the clinical point of view it was found that the first evaluation carried out in early 2002, of a total of 38 children diagnosed with parasitic infection, only 15 had symptoms suggestive asthenia (7 cases), headache inconsistent (8 children), abdominal pain around the navel (11 children), decreased appetite (14

children), weight loss (9 children), anal/nasal pruritus (6 children), flatulence (10 children) (Figure 2). On clinical examination carried out in early 2012 from a total of 10 patients with parasitic infections, only 2 had clinical symptoms suggestive: periumbilical abdominal pain, loss of appetite, headache inconsistent, flatulence (Figure 2). Clinical changes measured at difference of 10 years for the study group had statistical significance with improvement in clinical status of patients studied ($p = 0.000538$).

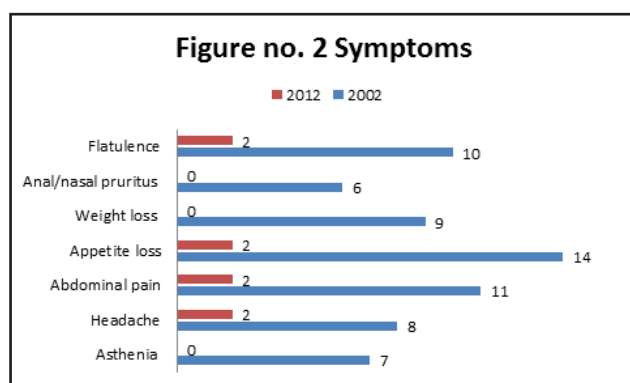


Figure 2 Symptoms

In the period 2002 - 2012 were found LCD4 average elevations under antiretroviral treatment to 221.5 cells / mmc (minimum: 27 cells / mmc - Maximum: 702 cells / mmc) to 512.6 cells / mmc (minimum: 272 cells / mmc - maximum: 890 cells / mmc). Of the 38 HIV positive children received antiretroviral treatment 32 patients who met the inclusion criteria according to national guidelines for HIV patient care [7].

Discussions

In literature there are many studies on parasitic infestations in children communities both HIV positive and HIV negative, and they are noticed different frequencies for different parasites. In studies conducted in children populations of Constanta both HIV-positive and HIV-negative parasite Giardia

lamblia is the most common. [8] In other studies in different countries in Africa in populations of children both HIV seropositive and HIV seronegative there were higher percentages for parasites such as Ascaris, Cryptosporidium or Blastomices hominis [9-12].

In a study performed by Stoicescu R et al. about 564 kindergarden children from Constanta County, non HIV, aged between 1-6 years they found a 15.45% digestive parasitic infections. In this study, like in our study, among protozoa, Giardia was the most frequent identified parasite from all cases. Regarding infection with only one species of parasites we found a proportion of 79.8% in first examination of our studied group, and similar value (82%) was found in non HIV kindergarden children [8].

Among children who attend to a day care center in an urban area of Matanzas city, Cuba, in 2012 was performed a cross-sectional study to determine the prevalence of intestinal parasites in stool samples in children under five years old. They found that 71.1% of children harbored at least one type of intestinal parasite and 45.2% were infected by more than one species. Giardia duodenalis and Blastocystis sp. were the most common parasites found, with prevalence rates of 54.8% and 38.5% respectively [9].

In study performed by Chirdan OO, et al. about intestinal parasites in children attending day care centers in Jos, Nigeria, they found that 57.8% from the total of 384 children studied had intestinal parasites. Among these children the commonest parasites involved were Ascaris lumbricoides, Ancylostoma duodenale and Trichuris trichura [10].

In a study performed by Cegielski JP et al. regarding intestinal parasites and HIV infection in Tanzanian children with chronic diarrhea found that HIV infection was common in children with chronic diarrhea, and parasitic agents of diarrhea may be important in children with chronic diarrhea both with and without HIV infection in this setting. In this study they found that B. hominis was more frequent in HIV-infected children [11].

Another study performed by Chintu C et al. about intestinal parasites in HIV-seropositive Zambian children with diarrhoea they found that the commonest parasites identified were Ascaris and Cryptosporidia and also that in chronic diarrhoea a higher cryptosporidium identification rates (21%),

comparative with acute diarrhoea (5%) [12].

Conclusions

1. After 10 years of HAART the incidence of parasitic diseases showed a significant decrease from 94.9% to 26.31% in the community of HIV + children studied.

2. The commonest parasitic infections were *Giardia lamblia* and *Blastocystis hominis*.

3. Under HAART therapy is found to decrease parasitic infestation and disappearance poliparasitism.

4. There is an improvement in clinical symptoms and immunological status after a period of 10 years of HAART.

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