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Short Communication

Prevalence of intestinal parasitic infections in Bulgarian HIV-infected patients

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Abstract

This study assessed the frequency of intestinal parasites and characterized epidemiological, etiological and clinical variables in 33 HIV-infected Bulgarian patients with dyspeptic symptoms for the past 5-year period. Results were positive for parasitic intestinal infections in 25 % of individuals. All patients had good socioeconomic conditions with basic sanitation, urban dwellings, treated water supply and sewage, good nutritional status. Most of the patients were before starting or at the beginning of cART. Parasites were found at the following frequencies: cryptosporidia (*n* = 3), *Giardia lamblia* (*n* = 3) and *Blastocystis hominis* (*n* = 2). The study emphasizes the need to perform stool examinations for the detection of parasites in patients with dyspeptic disorders, particularly, but not exclusively, in patients with diarrhea.

Keywords: cART. HIV/AIDS, Immune suppression, Intestinal parasites

INTRODUCTION

HIV/AIDS is a global health problem (Salim et al., 2007), which is also the case of parasitic infections (Brooker, 2010). The detrimental health effects of intestinal parasitic infections such as chronic diarrhea, weight loss, and malnutrition might be major causes of death among AIDS patients (Karp and Auwaerter, 2007). HIV causes harm to the human immune system resulting in an increased opportunity for contracting infections with parasitic species (e.g. *Cryptosporidium* spp., microsporidia, *Giardia intestinalis*, and *Strongyloides stercoralis*) (Tzipori and Widmer, 2008; Karp and Auwaerter, 2007; Corbett et al., 2002; Xiao et al., 1999; Li-Guang et al., 2013; Goguel et al., 1997; Carr et al., 1998). HIV has a negative influence on the natural evolution of parasitic infections, and not only does it aggravate clinical symptoms, but also complicates treatment (Li-Guang et al., 2013). At the same time, immunological changes caused by parasitic infections may facilitate HIV replication and accelerate disease progression to acquired immunodeficiency syndrome (AIDS). Since the introduction of combination antiretroviral therapy (cART), the prevalence of opportunistic parasitic diseases has dramatically decreased. However, despite the use of cART, several HIV-infected patients still have intestinal parasitic infections (Mönkemüller et al., 2000; Goguel et al., 1997; Cimerman et al., 1999; Pavie et al., 2012).

Objective

The purpose of this study was to assess the prevalence of parasitic infections among HIV-infected Bulgarian patients for the past 5-year period.

METHODS

This retrospective study was performed between January 2011 and December 2016, and included all HIV-infected

patients with dyspeptic disorders monitored at the AIDS Department of the Specialized Hospital for Infectious and Parasitic Diseases in Sofia, Bulgaria. The department in question is currently monitoring and treating approximately 800 patients, who account for two-thirds of all HIV-infected patients in Bulgaria.

Two consecutive stool samples were collected for macroscopic examination and detection of parasites from the patients complaining of diarrhea or other dyspeptic disorders (abdominal pain, bloating, anorexia, and nausea). Another stool sample was collected for bacterial stool culture from the patients with diarrhea (defined as at least three loose or liquid stools in the previous 24 h). The stool samples were analyzed for the presence of ova and parasites at the National Reference Laboratory of Parasitology, National Institute of Infectious and Parasitic Diseases in Sofia, Bulgaria. *Cryptosporidium* spp. was detected by modified acid-fast staining (modified Ziehl–Neelsen staining). For the diagnosis of protozoa, a culture method and Lugol's iodine method were employed to detect *B. hominis. G. intestinalis* was detected using Lugol's iodine method. A positive result was sufficient to diagnose an infection.

The following data was collected for each patient: age, gender, risk factor(s) for an HIV infection, clinical stage, CD4 and CD8 cell counts, plasma HIV RNA level, and use of cART.

The CD4 and CD8 T-lymphocyte counts were determined using FACS Calibur flow cytometry (Becton Dickinson, USA), and T-lymphocyte measurements were performed by the personnel of the National Reference Laboratory of Immunology, National Institute of Infectious and Parasitic Diseases in Sofia, Bulgaria. HIV RNA measurements were carried out by the personnel of the Confirmatory National Laboratory of HIV, National Institute of Infectious and Parasitic Diseases in Sofia, Bulgaria.

RESULTS

Two consecutive stool samples from 33 patients were analyzed. The patients were mostly men (n= 29, 87%), epidemiological category MSM, and the average age was 35 years. The median CD4 cell count was 270/mm^3, and 90% were receiving cART (n=30). Diarrhea was present in 31 patients (93%), 8 of whom (25%) had intestinal parasites detected in the stools. The overall prevalence of intestinal parasites was 24%, and pathogens included cryptosporidia (*n* = 3), *Giardia lamblia* (*n* = 3) and *Blastocystis hominis* (*n* = 2).

All patients had good socioeconomic conditions with basic sanitation, urban dwellings, treated water supply and sewage, good nutritional status.

The patients infected with cryptosporidia suffered from severe immune suppression. All of them were newly diagnosed with HIV infection and had watery diarrhea, malnutrition and emaciation. The CD4 T-lymphocyte counts of the patients were below 100 cells/mm^3 (median, 55 cells/mm^3) and plasma HIV RNA levels - above 100 000 copies/mm^3.

The patients were treated with Azithromycin, and cART was initiated. In one patient who was coinfected also with *Mycobacterium tuberculosis,* and had disseminated candidiasis the disease resulted in a lethal outcome.

The patients infected with *Giardia lamblia* and *Blastocystis hominis* suffered from moderate immune suppression. All of them had CD4 T-lymphocyte counts over 350 cells/mm^3 (median, 382 cells/mm^3). One of the patients was with undetectable plasma HIV RNA level, the rest were with variable plasma HIV RNA levels (average, 55 000 copies/mm^3). The dyspeptic symptoms of the patients were various: intermittent mushy diarrhea (*n* = 4; 80%), nausea (*n* = 3; 60%), abdominal pain (*n* = 4; 80%), and vomiting (*n* = 1; 20%), but the most frequent symptom was bloating (100%). All the patients infected with *Giardia lamblia* and *Blastocystis hominis* were treated with Metronidazole. We observed relapses in two patients: two relapses in one patient infected with *Giardia lamblia*, and one relapse in one patient infected with *Blastocystis hominis*. The relapses of the infection with *Giardia lamblia* were treated with Albendazole, but the second time a prolonged course of Metronidazole treatment was added. The relapse of the infection with *Blastocystis hominis* was treated successfully with Co-trimoxazole. In both patients cART was also initiated.

CONCLUSION

The co-infection with *Cryptosporidium* spp. was associated with a reduced level of CD4 + T-lymphocytes, which confirmed the opportunistic nature of the infection. The common symptom in all patients infected with this parasitic agent was watery diarrhea. The co-infection with *B. hominis* and *Giardia lamblia* was associated with moderate immune suppression, and a variety of clinical symptoms. The common symptom of these parasitic infections was bloating. This data emphasizes the need to perform stool examinations for the detection of parasites, particularly, but not exclusively, in patients with diarrhea.

Conflict of Interest

No conflict of interest to declare.

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