

Multiple Simultaneous Gastrointestinal Parasitic Infections in a Patient with Human Immunodeficiency Virus

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Patients with the human immunodeficiency virus (HIV) infection are at high risk for gastrointestinal infections causing diarrhea, particularly when those infections are parasitic in nature. This propensity is more pronounced in AIDS, where opportunistic parasitic infections may cause severe diarrhea, marked absorptive dysfunction, and significant risk of mortality. There are scant data regarding parasitic infections among HIV patients in the developed world; most studies and research come from poverty-stricken areas of South Africa, India, Iran, and the South Pacific. Although multiple infections with the same or different parasites have been reported, simultaneous infections are rare. We present the case of a 35-year-old man who developed a co-infection with *Giardia*, *Cryptosporidium*, and *Strongyloides*, simultaneously, the diagnosis being made after the judicious evaluation of a stool sample. Given the associated morbidity, prompt diagnosis and treatment are needed to avoid further complications in patients with HIV. To our knowledge this is the first reported case of triple parasitic infection in a patient with HIV. [*PR Health Sci J* 2016;35:97-99]

Key words: *Giardia lamblia*, *Cryptosporidium* spp, *Strongyloides stercoralis*, Diarrhea, Human Immunodeficiency Virus

Patients with the human immunodeficiency virus (HIV) are at high risk for gastrointestinal infections causing diarrhea, particularly when those infections are parasitic in nature (1). This problem is more pronounced in patients with the acquired immunodeficiency syndrome (AIDS), in which patients opportunistic parasitic gastrointestinal infections (PGIs) may cause severe diarrhea, marked absorptive dysfunction, and significant of mortality (2). This scenario is complicated by the great number of patients with HIV/AIDS who live in areas that are hyper-endemic for PGIs, mainly acquiring them in childhood and remaining chronically infected into adulthood (3). Chronic immune activation has been observed in parasitic infections, especially those involving helminths (4), as well as those that alter T helper 2 cell (5). Although its complete impact is uncertain, this immune modulation has been shown to increase host susceptibility, promoting both HIV infection and disease progression (6, 7). Data are scant regarding PGI among HIV patients in the developed world, as most studies have originated in poverty-stricken areas of South Africa, India, Iran, and the South Pacific. These reports show the prevalence of PGI (cryptosporidiosis, giardiasis) to be 11 to 18% for areas of Ethiopia and Iran, but to reach as high as 83% in certain areas of South Africa (8). Because of this, PGI should be highly considered in patients with compatible clinical presentation. We present the case of a patient with multiple PGIs who was managed at University Hospital in San Juan, Puerto Rico.

Case Presentation

The patient is a 35-year-old man from Argentina, evaluated in the emergency room (ER) and complaining of abdominal pain. The patient described several episodes of soft/liquid stool that had been occurring for 2 weeks and that he had self-treated with bismuth subsalicylate (without improvement). After 1 week of self-medication, his diarrhea had increased, with new-onset abdominal pain. The patient located the pain in the right upper quadrant (RUQ) and described it as being non-radiating, constant, and dull and noted that it tended to occur concurrently with bloating. In addition, he reported experiencing periods in which the pain intensified. He denied having any other symptoms and denied, as well, having traveled recently. The physical examination was significant for oral thrush and a non-distended abdomen with mild diffuse tenderness, more prominent over the RUQ, with positive Murphy's sign.

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The patient had been diagnosed with HIV 2 months prior and was scheduled to begin antiretroviral therapy (ART). His CD4 count at the time of the evaluation was 38 cells per mm³, and he had a viral load of 130,000 copies per ml. The patient had no other systemic illness. He had been living in Puerto Rico for the last 10 years and traveled to Argentina yearly, the last trip having been a year prior to his presentation in the ER. The patient worked as a cook and frequently worked with uncooked meat and poultry as well as with produce.

The patient was started on fluconazole for his oral thrush, ciprofloxacin and metronidazole to manage possible infectious diarrhea, and trimethoprim-sulfamethoxazole as a prophylaxis against *Pneumocystis*. A stool work-up (bacterial cultures and an examination for ova and parasites [O&P]) was done, and abdominal magnetic resonance imaging (MRI) was performed to further evaluate the RUQ pain.

The O&P test came back positive for *Giardia lamblia*, which was addressed by the therapy that was administered. The patient showed improvement regarding his diarrhea but not his pain. The MRI revealed acalculous cholecystitis, and so a stool acid-fast bacillus (AFB) stain was requested, which showed the presence of oocyst compatible with *Cryptosporidium*. At this time, the metronidazole was changed to nitazoxanide, and ciprofloxacin was continued pending a final stool-culture report. After some improvement, the patient was discharged home and instructed to complete therapy with nitazoxanide and ciprofloxacin.

The patient returned 3 days later, presenting a maculopapular rash on his trunk and extremities. He had discontinued ciprofloxacin but continued with trimethoprim-sulfamethoxazole, as prescribed. His abdominal pain had restarted. The therapy with nitazoxanide was continued, while ciprofloxacin and trimethoprim-sulfamethoxazole were stopped, as a possible allergic reaction was suspected. O&P was repeated to evaluate a possible persistent infection with either *Giardia* or *Cryptosporidium*. The allergy/immunology service was consulted to evaluate the rash. They performed a trimethoprim-sulfamethoxazole rechallenge that confirmed that the patient was allergic to the medication, which explained the rash. The patient was begun on dapsone (for pneumocystis prophylaxis). The O&P revealed the presence of *Strongyloides stercoralis*, which was treated with ivermectin. The patient was discharged and instructed to complete therapy with nitazoxanide.

The patient was seen in outpatient clinics 1 month later and reported that he had remained without diarrhea or abdominal pain. The patient had since started HIV therapy with efavirenz/emtricitabine/tenofovir, which had resulted in an improvement of his CD4 count and a decrease in his viral load.

Discussion

Diarrhea causes significant morbidity in HIV-infected patients and may be secondary to multiple etiologies. Diarrhea is also an independent predictor of reduced quality of life (9). After

the implementation of ART, the infectious causes of diarrhea are significantly reduced, with medication-induced diarrhea becoming the most prevalent (10). However, a significant number of patients still present with diarrhea due to infectious etiologies, particularly parasites (4). Different studies have demonstrated a consistent association between *Strongyloides stercoralis* and *Giardia lamblia* infection with HIV status, as is also seen with other immune disorders (11). *Cryptosporidium parvum* and *Giardia* are the most common PGIs affecting humans (12), worldwide. Both *Giardia* and *Cryptosporidium* have proven to be important emerging protozoan pathogens that contribute significantly to diarrheal disease outbreaks in both developed and developing nations (13). Despite this, there are few data regarding PGI in this population, with most being produced in developing countries, where the problem is more prominent. Although multiple infections with the same or different parasites have been reported (more commonly *Giardiasis* and *Strongyloidiasis*), simultaneous infections occur with less frequency, making the data on them scant.

Although the treatments for *Strongyloidiasis* and *Giardiasis* are well established, even in HIV-infected patients, this is not the case for cryptosporidiosis. A common presentation for this organism is acalculous cholecystitis, the presentation of which in this patient prompted his evaluation. Most data regarding the treatment of cryptosporidiosis have been evaluated in children, in whom the use of nitazoxanide has been proven to be successful (14). Some data support nitazoxanide's use in HIV-infected patients, in whom the drug has been found to be effective (14), despite there being some reports claiming that treatments using it had no beneficial effect (15). Antiretroviral therapy remains the mainstay of therapy. In this case, nitazoxanide produced clinical and microbiological resolution, possibly supporting its use in this population. This case illustrates how PGIs can be the etiologic agents in HIV-infected patient with chronic diarrhea. It also shows how a patient may present with multiple parasitic infections, at times simultaneously, making diagnosis and management a clinical challenge. Simultaneous, rather than sequential, infection is believed to be at work in this patient, since his time outside the hospital was too short to reasonably allow for exposure/incubation. Physicians should maintain a high index of suspicion for parasitic co-infections in patients with AIDS who complain of the persistent symptoms mentioned herein. Even after a literature review, we failed to identify any case reports detailing 3 simultaneous parasitic gastrointestinal infections, such as was seen in our patient.

Resumen

Pacientes con el virus de inmunodeficiencia adquirida (VIH) están a mayor riesgo de contraer infecciones gastrointestinales que produzcan diarreas, en particular infecciones por parásitos. Estos tipos de infecciones oportunistas son aún más severas en pacientes con SIDA, donde las diarreas pueden ser severas, asociadas a mal-absorción y con aumento en mortalidad.

La información disponible sobre infecciones parasíticas en pacientes con VIH en el mundo desarrollado es muy escasa; muchos de los estudios e información disponible provienen de áreas de alta pobreza como África del Sur, India, Irán y el Pacífico Sur. Infecciones por parásitos pueden ocurrir múltiples veces, pero infecciones simultáneas son raras. Presentamos el caso de un hombre de 35 años de edad que desarrolló co-infección con *Giardia*, *Cryptosporidium* y *Strongyloides* simultáneamente, llegando al diagnóstico luego de una evaluación meticulosa de la excreta. Debido a la morbilidad que se asocia a estas infecciones, un diagnóstico rápido y tratamiento adecuado son necesarios para evitar complicaciones asociadas a pacientes con VIH.

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