Giardiasis: a malignant mimicker?

Ozdemir Kanar¹ · Rahman Nakshabendi¹ · Faiz Jiwani² · Yuzhou Liu² · William Allsopp³ · Andrew C. Berry⁴

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A 27-year-old man, with no pertinent past medical history, presented with a 3-week history of severe nausea, vomiting, diarrhea, and abdominal pain. The pain was non-specific and described as bloating. Associated symptoms included subjective fever and flatulence. The patient worked as a truck driver, traveling often, who had recently transported a shipment of river mulch. His mother was recently diagnosed with colon cancer and grandmother with lymphoma. The patient was afebrile, normotensive, and mildly tachycardiac on arrival. No cough, chest pain, alcohol use, weight change, sick contacts, or bleeding was reported. Physical examination revealed diffuse abdominal tenderness without peritoneal signs. Complete blood count showed a leukocytosis at $17.4 \times 10^3/\mu\text{L}$. Folate, B12, and a kidney, ureter, bladder X-ray (KUB) imaging were unremarkable. The patient was guaiac negative. Stool culture, leukocytes, ova and parasites were ordered. The patient was immediately started on piperacillin/tazobactam, which was later switched to metronidazole and ceftriaxone. Abdominal CT scan without contrast demonstrated extensive bulky mesenteric and retroperitoneal adenopathy with fat stranding, suspicious for an underlying neoplasm, likely lymphoma (Figs. 1, 2, 3).

Hematology/oncology was consulted, and recommended lymph node biopsy, which the patient refused. HIV 1/2 antibody test came back negative, although the CD4 count was 171 cells/ μL . A peripheral smear was unremarkable. Stool giardia test was positive. He was then started on metronidazole for 10 days. The patient experienced improvement in symptoms with resolution of leukocytosis. A follow-up CT scan was recommended in 1 month.

Giardiasis affects approximately 20,000 adults and children each year in the United States, while prevalence in the developing world has been reported as high as 20–30 % of the pediatric population [1]. The largest affected group in the United States includes travelers, who account for almost 40 % of cases. Children younger than 5 years of age, immunocompromised patients and individuals with hypochlorhydria or cystic fibrosis are also particularly susceptible. The infectious cysts that cause this illness can be transmitted by consuming contaminated food or water or via fecal–oral transmission. Clinically, this infection most often culminates in a typical presentation of acute giardiasis whose features include sudden onset diarrhea (90 %), malaise (85 %), steatorrhea (70 %), abdominal cramps and bloating (70 %), flatulence (75 %), and nausea (70 %), as well as weight loss, vomiting, or fever [1]. Lymphadenopathy can also be found in patients with giardiasis. Thus, giardiasis must be on the differential list in certain patients with intra-abdominal lymphadenopathy.

Our patient had a non-contributory past medical history, and presented with a 3-day history of nausea, vomiting, diarrhea and abdominal pain. There was a remote family history of lymphoma, with the patient's abdominal CT scan revealing extensive bulky adenopathy suspicious of lymphoma. A diagnosis of giardiasis was reached shortly thereafter by stool testing. The conclusion of reactive lymphadenopathy was made in the setting of clinical

✉ Andrew C. Berry
aberry5555@gmail.com

¹ Department of Medicine, University of Florida College of Medicine-Jacksonville, Jacksonville, FL, USA

² University of Florida College of Medicine, Gainesville, FL, USA

³ Department of Radiology, University of Florida College of Medicine-Jacksonville, Jacksonville, FL, USA

⁴ Department of Medicine, University of South Alabama, 2451 Fillingim St, Mobile 36617-2238, AL, USA

Fig. 1 Axial post-contrast CT at the level of the kidneys demonstrate multifocal prominent and enlarged mesenteric/periaortic lymph nodes. Associated inflammatory fat stranding noted in the mesentery

Fig. 2 Axial post-contrast CT at the level of the mid abdomen demonstrates bulky homogenous mesenteric adenopathy, with adjacent inflammatory fat stranding

improvement, and resolution of leukocytosis and lymphadenopathy was confirmed on 1-month follow-up CT scan with metronidazole use. The patient's occupation may provide a potential explanation for his exposure. The extensive domestic travel typical of a truck driver may increase opportunities for person-to-person transmission in areas where giardiasis is endemic. An alternative risk factor for our patient was that he had recently transported a load of river mulch, which may have sheltered giardia cysts. Lymphadenopathy in giardiasis is not an unusual finding. In a study of 49 pediatric patients with giardiasis hospitalized for unexplained clinical manifestations in outpatient care, mesenteric lymphadenopathy was revealed by ultrasound in 42 children [2]. However, due to the limitations of ultrasound, the extent of lymphadenopathy in giardiasis is not well established. Separately, retroperitoneal

Fig. 3 Coronal post-contrast CT of the abdomen demonstrates bulky homogenous mesenteric adenopathy, with adjacent inflammatory fat stranding

lymphadenopathy has been described in a patient whose giardiasis was the cause of protein-losing enteropathy; however, notably this patient was later found to have an underlying MALT lymphoma. In light of these cases, the bulky mesenteric and retroperitoneal lymphadenopathy diagnosed by abdominal CT scan in this patient appears unique in extent.

Extensive intra-abdominal lymphadenopathy can be indicative of various pathological processes, which may be inflammatory, infectious or oncologic. Of importance, the now-infamous “incidentalomas” often found on CT scans have led to greater caution when interpreting such studies. In our patient, the findings of extensive bulky mesenteric and retroperitoneal adenopathy with fat stranding on CT was initially suspicious for an underlying neoplasm, likely lymphoma. However, bulky adenopathy with adjacent inflammatory fat stranding is a common presentation of lymphoma on abdominal CT (Fig. 4; not the same patient). Unable to distinguish etiology on clinical presentation alone, clinicians may opt instead for an initial noninvasive workup, including stool studies, to rule out infectious causes followed by studies into alternative explanations. Of note, patients with portal hypertension or portal or mesenteric vein thrombosis may develop portosystemic collateral varices in the mesentery, which are often confused with lymphadenopathy [3].

There was one additional atypical feature regarding this patient's presentation. Our patient's laboratory findings were significant for a low CD4-positive T cell count (171 cells/ μ L) with a negative HIV 1/2 antibody test result. Causes of low CD4-positive cell count in the absence of HIV infection include: infections other than HIV, various immunodeficiency diseases, and idiopathic T cell

Fig. 4 Axial post-contrast CT of the abdomen at the level of the kidneys demonstrates bulky periaortic adenopathy with adjacent inflammatory fat stranding

lymphocytopenia. The diagnosis of idiopathic T cell lymphocytopenia should be made when CD4+T cell lymphopenia persists in the absence of infection with HIV-1 or other causes of severe infection or immunodeficiency. Specifically, CD4+T cell counts below 300 cells/ μ L or less than 20 % of total lymphocytes should be identified on more than one occasion, usually 2 or 3 months apart [4]. Some infections, tuberculosis in particular, are well known to cause specific CD4-positive lymphocytopenia, perhaps due to the crucial role of CD4-positive T cells play in mediating immunity against certain pathogens, after which they are consumed in the infection [5]. To the best of our knowledge, there are no case reports in literature describing a low CD4-positive lymphopenia caused by giardiasis. However, it is very hard to determine whether the giardiasis was the cause of this CD4-positive T cell lymphocytopenia, or whether the lymphopenia predisposed our patient to the giardiasis infection unless CD4-positive T cell count follow-up is completed.

Giardiasis is a parasitic infectious disease that is quite common in the USA. In addition to mesenteric

lymphadenopathy, which is common in the pediatric patient population, retroperitoneal lymphadenopathy can also present on CT scan, as illustrated by our case. Thus, clinicians are encouraged to include giardiasis in the differential diagnosis of extensive intra-abdominal lymphadenopathy in patients with a classic presentation of giardiasis.

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Informed consent Informed consent was obtained from all individual participants included in the study.

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