

Burkitt's lymphoma masquerading as a Crohn's flare

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Abstract

Sporadic Burkitt's lymphoma can have a variety of clinical manifestations, including a constellation of gastrointestinal symptoms that can masquerade as other conditions and lead to a delay in diagnosis. Here we review a case of Burkitt's lymphoma in a patient with a history of Crohn's disease, initially thought to be a Crohn's flare on initial presentation. This case highlights the importance of keeping a broad differential and ruling out Crohn's mimics in the process of treating a presumed exacerbation of inflammatory bowel disease.

Keywords Crohn's disease, Burkitt's lymphoma, inflammatory bowel disease

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Introduction

Burkitt's lymphoma is predominantly a cancer of childhood, usually associated with Epstein-Barr virus (EBV) infection but also seen sporadically in patients infected with human immunodeficiency virus (HIV) [1]. The pathogenesis of Crohn's disease is currently an area of active research; it is thought to develop largely through the interplay between changes in the host immune system, the gut microbiome, environmental factors, and genetic predisposition [2]. Given that host immunity is a major element in the development of cancer, there is a growing body of research into the potential association between Crohn's disease and malignancies [3]. In this case report, we describe a patient initially thought to have a Crohn's flare, but was subsequently found to have a new diagnosis of Burkitt's lymphoma.

Case report

A 30-year-old Caucasian male with a history of ileocolonic Crohn's disease diagnosed 15 years earlier presented to our hospital complaining chiefly of persistent abdominal pain with bloody diarrhea and bilious emesis. His Crohn's had previously been managed with intermittent prednisone tapers at the time

of diagnosis in the distant past, as well as a prior colonoscopy in the interim; however, these results were unobtainable. Overall, it appeared that his Crohn's disease had been in remission for approximately 15 years prior to this presentation. As part of his outpatient management for abdominal pain and bloody diarrhea, he had recently started treatment with adalimumab approximately 4 weeks prior to presentation, currently taking 40 mg every other week subcutaneously. He had moderate-to-severe diffuse abdominal pain with no alleviating or exacerbating factors and his bowel movements were frequent (approx. 3-4 per day), loose, and maroon in color.

Physical examination revealed a young male in no acute distress, with moderate abdominal pain on palpation, but otherwise unremarkable. His laboratory studies were significant for a hemoglobin level of 12.6 g/dL, a mean corpuscular volume of 70.6 fL, and a white blood cell count of $5.5 \times 10^9/L$. His erythrocyte sedimentation rate and C-reactive protein were elevated at 86 mm/h and 88.87 mg/L, respectively. Outpatient tuberculosis testing was negative, and HIV was non-reactive. EBV polymerase chain reaction and heterophile antibody were negative.

In the outpatient setting, he had received a prior computed tomography (CT) scan, which showed significant worsening of the bowel wall thickening and inflammatory process involving the cecum and terminal ileum. Given his worsening clinical picture, a repeat CT scan was obtained on admission for interval comparison and to rule out abscess or alternate etiologies of his pain. CT imaging of the abdomen and pelvis with contrast on admission showed a greater than 20 cm segment of bowel wall thickening and dilatation involving the terminal ileum and cecum (Fig. 1). Given the concern about an underlying Crohn's flare, and since he was failing outpatient management with adalimumab, he was initially started on a trial of IV hydrocortisone 100 mg t.i.d. and infliximab 5 mg/kg, but his clinical picture continued to deteriorate, prompting a colonoscopy. This revealed several polypoid masses with stigmata of recent bleeding extending for over 20 cm from

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the hepatic flexure to the cecum with partial obstruction of the lumen (Fig. 2). Given the altered anatomy from the circumferential, contiguous mass lesions, the terminal ileum was not found and no normal colonic mucosa was present on the right side of the colon. The typical endoscopic stigmata of Crohn's disease were not present and multiple biopsies from the right-sided colon lesions were taken. Pathology from the biopsies returned with a final diagnosis of classic t(8;14) Burkitt's lymphoma and he went on to be treated with combination chemotherapy resulting in clinical remission.

Discussion

Much has been elucidated in the past few decades about the pathogenesis of inflammatory bowel disease and how it may relate to cancer biology. The interplay between the host immune system, the microbiota in the lumen, environmental triggers, and genetic predisposition are thought to be the primary drivers of active disease in Crohn's disease [2]. The host immune system is particularly important in the defense against malignancy and any manipulation of this from underlying inflammatory bowel disease is likely to augment cancer risk. For instance, the interplay between autophagy, the body's ability to self-digest inadequate or malignant cells, is emerging as a key component of the pathogenesis of Crohn's disease and could potentially lead to the development of cancer, particularly gastrointestinal-related cancers [3]. Additionally, the mainstay of treatment of Crohn's disease largely involves immunosuppression, while the role of underlying inflammatory bowel disease and/or immunosuppression in extra-intestinal malignancy risk is an area of active research in Crohn's disease [4].

Burkitt's lymphoma is primarily a cancer of childhood and has a high treatment success rate with just chemotherapy alone in children [5]. It is classified by the World Health

Organization into 3 general subtypes: endemic, sporadic, and immunodeficiency-related [1]. The endemic type is most prevalent in areas of high malaria burden and EBV, commonly found throughout Africa. The sporadic type, otherwise known as unrelated to infection, is found mostly across Europe and North America. Lastly, the immunodeficiency type is mostly seen in patients with HIV [5]. In general, non-pediatric patients tend to do more poorly in terms of outcomes and require immediate staging and aggressive chemotherapy treatment [6].

The clinical presentation of sporadic Burkitt's lymphoma normally includes abdominal pain, distention, nausea, vomiting, and gastrointestinal bleeding, on top of the typical "B-symptoms" of fevers, night sweats, and weight loss [7]. Approximately 25-30% of cases present with an ileocecal pathology, including mass lesions [6]. The most common site of Crohn's disease is also in the terminal ileum, with approximately 50% of patients presenting with pathology at this site along with the same clinical syndrome of abdominal pain, distention, nausea, vomiting, and gastrointestinal bleeding [8]. Burkitt's is diagnosed through pathologic studies, including immunohistochemistry and microscopy, while Crohn's disease is a clinical diagnosis, made on the basis of clinical symptoms, endoscopic studies and radiologic findings [7,8].

Lymphomas have been implicated in the literature as a potential complication of Crohn's disease [9]. Burkitt's lymphoma, in particular, has been associated with high incidence rates in immunosuppressed patients and is most commonly seen in patients with HIV [6]. Additionally, EBV infection is known to be one of the most common causative agents of Burkitt's lymphoma [6]. However, previous studies indicate that, despite the immunosuppression associated with Crohn's treatment, EBV viral loads are unchanged in Crohn's patients compared with controls [10]. Therefore, it is unclear whether the underlying Burkitt's lymphoma in this patient was coincidental or related to his underlying inflammatory bowel disease. However, this case certainly illustrates the ability of Burkitt's lymphoma to masquerade as other diagnoses.

In summary, our case report shows the development of Burkitt's lymphoma within the gastrointestinal tract of a patient with underlying Crohn's disease. This case underscores the importance of clinically confirming a Crohn's flare diagnosis before or in conjunction with empiric immunosuppressive treatment, while also maintaining a broad differential in patients who initially do not respond to first-line treatments.

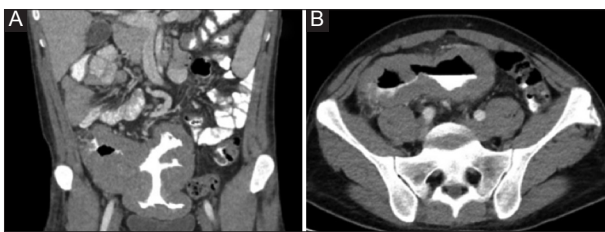


Figure 1 (A) Coronal and (B) axial computed tomography views, showing bowel wall thickening and dilatation

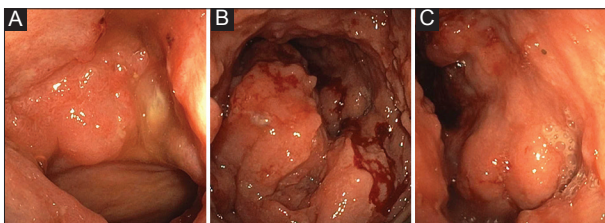


Figure 2 (A) Colonoscopy images showing multiple polypoid masses, (B) bleeding stigmata, and (C) partially obstructed lumen

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