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CASE REPORT | SMALL BOWEL

A Puzzling Case of Pouch Pathology

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ABSTRACT

A 36-year-old man with familial adenomatous polyposis secondary to an adenomatous polyposis coli mutation status post proctocolectomy with ileal pouch-anal anastomosis presented with hematochezia. Pouchoscopy revealed a 4-cm indurated mass in the distal ileal pouch just 17 months after a normal pouchoscopy. Histopathology was diagnostic for Burkitt lymphoma, and the patient achieved complete remission with subsequent chemotherapy. Although there are reports of Burkitt lymphoma in patients with ileal pouch-anal anastomosis, to date, this is the first report in a patient with familial adenomatous polyposis. This case highlights the presentation of a rapidly enlarging tumor not commonly seen in the adult gastroenterology population.

INTRODUCTION

Primary malignancy of the small intestine is a rare occurrence, accounting for approximately 2%–3% of all gastrointestinal malignancies. Lymphoma comprises ~15%–20% of all small intestine neoplasms and 20%–30% of all primary gastrointestinal malignancies.[1] Burkitt lymphoma is a highly aggressive form of non-Hodgkin B-cell lymphoma with a favorable response if diagnosed accurately and treated early and often presents at extranodal sites. It has a characteristic translocation involving the *C-MYC* gene at band q24 on chromosome 8 and is highly responsive to chemotherapy. Burkitt lymphoma in endemic regions classically affects young males (ages 10–30 years) often presenting as a jaw or facial bone tumor related to Epstein-Barr viral infection.[2] However, in nonendemic regions, such as the United States, Burkitt lymphoma may present as a small bowel tumor causing intussusception and most frequently occurs in the pediatric and adolescent population. Burkitt lymphoma of the small intestine in the adult population is an exceedingly rare entity with only a handful of case reports to date. There is no known established increased risk of small intestine Burkitt lymphoma in patients with familial adenomatous polyposis (FAP). The following case report highlights the rapid growth of a Burkitt lymphoma found in the ileal pouch of a young gentleman with FAP and, to the best of our knowledge, is the first case of small intestine Burkitt lymphoma found in a patient with FAP.

CASE REPORT

A 36-year-old immunocompetent man with a known history of FAP status post proctocolectomy and rectal mucosectomy with ileal pouch anastomosis (IPAA) presented with 10–11 days of loose, bright-red bloody stools up to 7–10 times per day associated with anal pain. The patient denied weight loss, abdominal pain, vomiting, or fevers. On examination, he was afebrile and hemodynamically stable without brisk bleeding. His abdomen was soft, nondistended, and nontender with a well-healed surgical scar. Laboratory examination revealed a normal complete blood cell count, electrolyte panel, hepatic panel, coagulation panel, and a negative human immunodeficiency virus. Pouchoscopy approximately 17 months before the current presentation exhibited a well-healed IPAA with a small amount of rectal mucosa and nodular-appearing mucosa of the neoterminal ileum. Biopsies from the neoterminal ileum demonstrated tubular adenomas without high-grade dysplasia.

Given his presentation with new-onset hematochezia, the patient underwent esophagogastroduodenoscopy and pouchoscopy. On the esophagogastroduodenoscopy, he was found to have innumerable fundic gland polyps (<1 cm in size, without concerning

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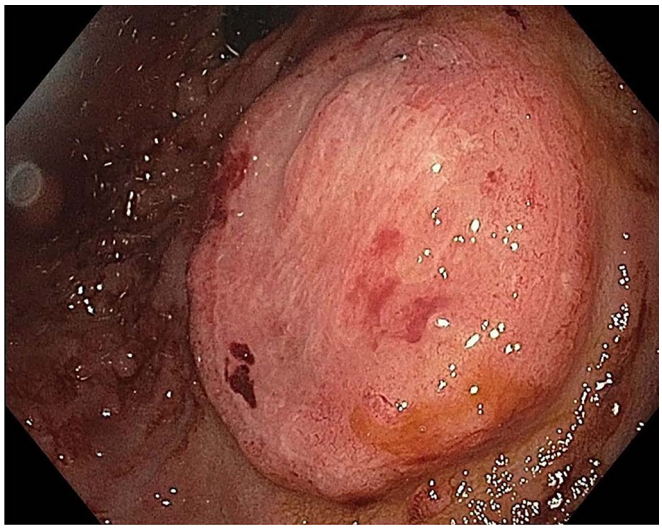

Figure 1. Endoscopic image of an infiltrating mass found at the distal ileal pouch during pouchoscopy.

features) and 10- to 12-subcentimeter duodenal polyps (pathology demonstrated tubular adenomas without high-grade dysplasia). The pouchoscopy showed that the anastomosis was intact, but he was found to have a 4-cm indurated mass in the distal pouch near the ileoanal anastomosis (Figure 1). Multiple biopsies were taken and sent for analysis in the pathology laboratory.

The ileal pouch pathology report resulted as Burkitt lymphoma (Ki-67 ~100%, Epstein-Barr virus negative, and without *MYC/Bcl-2 or -6* aberrations) (Figure 2). He was admitted to the oncology service for staging imaging, bone marrow biopsy, and urgent initiation of chemotherapy, given the aggressive nature of the tumor. Thoracic, abdominal, and pelvic computed tomography demonstrated mesenteric lymphadenopathy but otherwise no distant metastases. A bone marrow biopsy was completed without evidence of bone marrow involvement. He was initiated on a regimen of R-CODOX-M (cyclophosphamide, vincristine, doxorubicin, and rituximab with intrathecal methotrexate) promptly. After his first cycle of R-CODOX-M initiated as an inpatient, the patient was then transitioned to treatment with DA-R-EPOCH (dose-adjusted etoposide, prednisone, vincristine, cyclophosphamide, doxorubicin, and rituximab). He has now completed 6 cycles of this regimen, with a plan for 2 cycles of high-dose intrathecal methotrexate for central nervous system prophylaxis. At the time of this report, there was a complete response noted on positron emission tomography/computed tomography imaging.

DISCUSSION

To the best of our knowledge, this is the first report of Burkitt lymphoma in a patient with FAP. There is 1 report of a pediatric patient with FAP who developed a Burkitt-like lymphoma (with 11q aberration) and several cases of lymphoma developing in the pouch of patients with ulcerative colitis after proctocolectomy with IPAA.[3,4] Patients with an ileal pouch are at higher risk of malignancy within the pouch.[5]

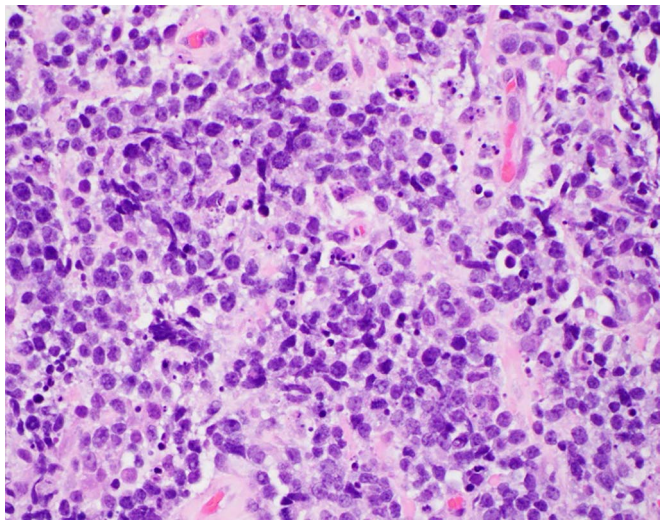

Figure 2. Histopathology demonstrating a diffuse infiltrate of neoplastic lymphoid cells arranged in sheets and cords in a background of necrotic debris. The neoplastic lymphoid cells are large with irregular nuclear contours, open chromatin, and distinct nucleoli. Frequent apoptotic bodies and occasional mitotic figures are present.

FAP is an inherited disorder characterized by cancer of the large intestine and rectum beginning at an early age as a result of a germline mutation in the adenomatous polyposis coli (APC) gene. The APC gene generally forms part of a destruction complex responsible for degrading ubiquitinated beta-catenin, and when APC is mutated, free beta-catenin accumulates and translocates to the nucleus with activation of Wnt target genes including *C-MYC*. *C-MYC* is a proto-oncogene which has been identified as a *Wnt* target gene in colorectal cancer cell lines and in intestinal epithelial crypts.[6] Burkitt lymphoma tumors are often characterized by inappropriately high levels of *MYC* expression, which explains a potential pathophysiologic link between these 2 conditions.

There are 3 clinical variants for Burkitt lymphoma which have been described: endemic, sporadic, and HIV-related.[7] In the presented case, our patient was found not to have a *C-MYC* mutation by fluorescence in situ hybridization or an underlying diagnosis of human immunodeficiency virus, so he likely had the sporadic variant, which is highly aggressive and comprises 30% of pediatric Burkitt lymphoma but <1% of adult non-Hodgkin lymphoma in the United States.[8,9] Although this particular tumor was not driven by the *C-MYC* mutation and was possibly sporadic, this case and discussion raise the interesting biologic plausibility that FAP may increase vulnerability to Burkitt lymphoma (and other lymphomas driven by *MYC*). Alternatively, the lack of previously published cases of Burkitt lymphoma in patients with FAP suggests that this might be a coincidental association rather than a true connection to be explored. More published cases and further scientific investigation would be necessary to define a causative relationship.

In conclusion, this case demonstrates a novel finding of Burkitt lymphoma in a patient with FAP. A link between these 2 conditions is biologically plausible but not definitively established,

and this case may have been a sporadic occurrence. Nonetheless, this case highlights a unique diagnosis in the FAP population and highlights the remarkably rapid growth of a tumor not commonly encountered in the adult gastroenterology practice.

DISCLOSURES

Author contributions: H. Rahal and D. Ehrlich wrote the manuscript. H. Paredes, W. Conlon, and A. Sedarat edited the manuscript. H. Rahal is the article guarantor.

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