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CASE REPORT

Gastroenterology

Pediatric colonic adenocarcinoma: A deceptive case of gastroenteritis and constipation

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Abstract

Adenocarcinoma of the colon is a rare diagnosis in pediatric patients. We present a previously healthy 15-year-old female who began experiencing escalating colicky abdominal pain and associated vomiting over 2 weeks in the setting of presumed acute gastroenteritis. A computed tomography scan revealed an obstruction in her descending colon. A multidisciplinary decision was made to perform a colonoscopy upon which a large, circumferential, friable lesion was discovered 40 cm from the anus. A colon decompression catheter was successfully inserted following controlled radial expansion (CRE) Balloon dilation to 13.5 mm beyond the mass, resulting in a significant discharge of fluid and gas. The patient underwent hemicolectomy with mass resection and colostomy. Biopsies confirmed poorly differentiated adenocarcinoma with "napkin-ring" morphology and positive lymph node metastasis with extranodal extension.

KEYWORDS

endoscopic decompression, large bowel obstruction, pediatric cancer

1 | INTRODUCTION

In the pediatric population, colon cancer is among one of the rare diagnoses, accounting for only 1% of pediatric malignancies.[1] According to the National Cancer Institute, from 2012 to 2020, there was a 0.2%–0.3% rate of colon cancer in patients less than 15 years old per 100,000 people.[2] Additionally, pediatric patients often have non-specific symptoms and develop de novo carcinoma in a previously normal colon. The prognosis for pediatric colon cancer has been noted to be poor, with most reports showing minimal survivors past 5 years after diagnosis.[3] These outcomes are thought to be secondary to aggressive histology and/or delayed diagnosis, leading to advanced staging of disease.[4] Given the escalating prevalence of pediatric adenocarcinoma, it is imperative to deepen our understanding of this disease within the pediatric demographic.[5–8]

2 | CASE REPORT

We present a 15-year-old previously healthy patient who developed new-onset profuse vomiting and diarrhea after she had eaten leftover shrimp. The patient continued to have severe colicky abdominal pain, and intermittent episodes of emesis, and eventually, she stopped having bowel movements. She was evaluated at several different urgent care centers over the 2 weeks after the initial presentation. Several attempts were made to manage presumed constipation with various laxatives. Unfortunately, her symptoms progressed, with acute anorexia and worsened abdominal pain and distention. At approximately 2 weeks from the start of the illness, a computed tomography revealed a transition zone at the proximal descending colon concerning a large bowel obstruction (Figure 1). After a discussion with our surgeon, we collectively decided a colonoscopy was the most appropriate next step to decompress her. We suspected that the patient may

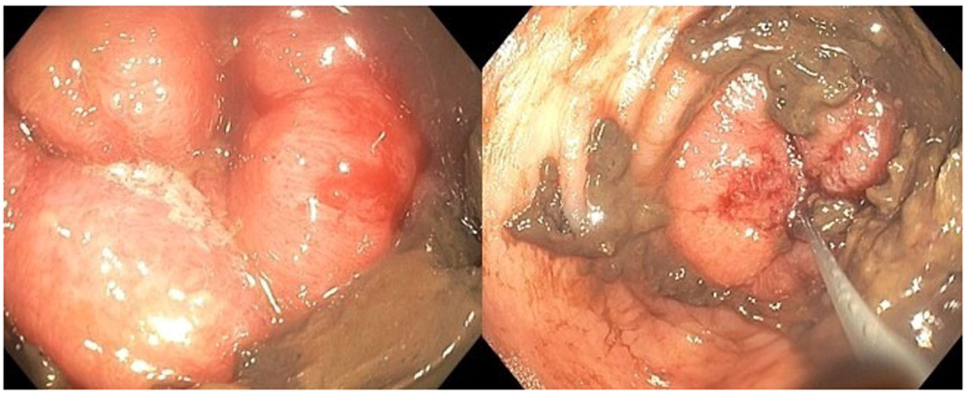

FIGURE 1 This is a completely obstructing medium circumferential, friable, malignant appearing mass observed in the descending colon at a depth of 40 cm from the anus. The right image shows the 0.025 biliary wire passing through a pinhole.

have developed a colonic stricture in the setting of undiagnosed inflammatory bowel disease.

Upon colonoscopy, a large circumferential lesion was identified approximately 40 cm from the anus (Figure 2). The mass effect from the lesion had created a nearly complete obstruction. Using a 0.025 biliary wire and fluoroscopy, we were able to advance the biliary wire past the obstruction. We then advanced a Boston Scientific Controlled Radial Expansion (CRE) Platinum Iridium Radiopaque (PRO) balloon through a very small opening. Fluoroscopy was used to confirm that the guidewire and balloon passed through the lesion. A balloon dilation was performed, starting at 10 mm, the minimum size necessary to pass the endoscope, and was progressively increased to 13.5 mm. With each serial dilation, there was notable decompression of the bowel, with significant liquid stool and pus exiting from the circumferential mass, and significant flatulence release. A colonic decompression catheter was advanced over the biliary guidewire with fluoroscopic guidance well beyond the lesion near the hepatic flexure. No free air was seen on fluoroscopy and the abdomen had flattened. Biopsies were taken from the lesion for urgent histologic evaluation which later confirmed colonic adenocarcinoma.

The following morning, the patient developed marked abdominal distention and pain. It was observed that her colonic catheter had become clogged overnight. We managed to unclog the catheter and decompress the abdomen. Subsequently, the patient was taken to the operating room. A 4.5 cm circumferential obvious mass was identified in the proximal descending colon. Findings of peritonitis with purulent fluid, exudates, and debris were also appreciated necessitating an abdominal washout. The patient was found to have a colonic perforation in an ulcerated area at the proximal aspect of the tumor in the descending colon just distal to the splenic flexure. The surgeon performed an extended left hemicolectomy with Hartman's pouch from the mass site to where there was a viable colon just past the hepatic flexure. The adjacent

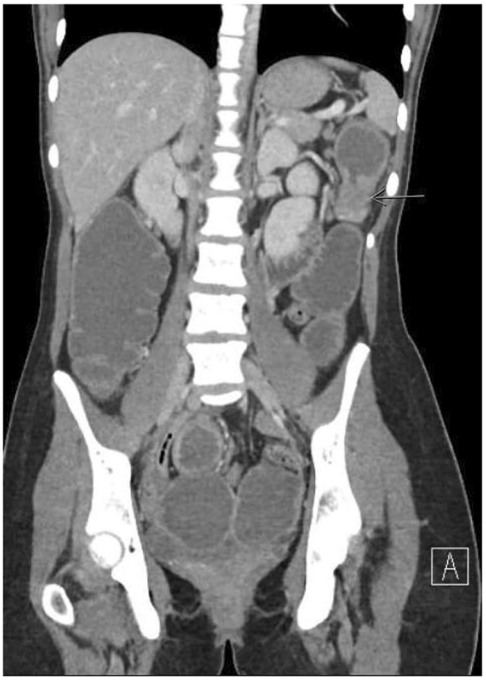

FIGURE 2 A transition zone is apparent at the level of the proximal descending colon.

mesentery and retroperitoneal lymph nodes were also removed for biopsy. A site was chosen for colostomy creation in the right lower quadrant. Biopsies confirmed moderate to poorly differentiated adenocarcinoma with "napkin-ring" morphology and positive lymph node metastasis with extranodal extension, 4.5 cm in greatest dimension, lymphovascular invasion, and tumor invasion into the pericolonic fibroadipose tissue. Patient remained intubated in the intensive care unit, but was quickly extubated on postop Day 1. She was started on total parenteral nutrition and slowly advanced to a regular diet. She continued to have fevers postoperatively and was found to have *Escherichia coli* peritonitis. She completed a 2-week course of

antibiotic therapy with ciprofloxacin and metronidazole and her fever abated. The oncology team classified the patient as Stage 3B and initiated a Folinic Acid, Flurouracil, Oxiliplatin (FOLFOX) chemotherapy regimen, 4 weeks following her hemicolectomy.

3 | DISCUSSION

Colorectal cancer is an unusual occurrence in children, with an annual incidence of roughly one case per 10 million adolescents under the age of 20.[9] The majority of these cancers are adenocarcinomas, which unfortunately respond less effectively to chemotherapy, and are often associated with extensive spread within the bowel wall and peritoneal carcinomatosis.

Our case was distinct due to the early detection of the adenocarcinoma lesion, identified just 2 weeks following the onset of the patient's symptoms. This early identification was likely facilitated by an episode of food poisoning or viral gastroenteritis that caused inflammation and edema at the tumor site, resulting in an obstruction of the large intestine. Before this illness, the patient did not have symptoms including weight loss, night sweats, or hematochezia.

This early detection is uncommon, as symptoms before diagnosis typically span from 2 to 6 months.[9] Furthermore, pediatric patients are not routinely screened, unlike up to 30% of adult patients who benefit from early detection through screening.[10]

The degree of distress and volume of nonabsorbable fluid this patient accumulated over 2 weeks necessitated immediate decompression before surgical intervention, which the surgeon felt could best be addressed initially by colonoscopy. Decompression facilitated the removal of a significant amount of pus and stool. This had the potential to ease subsequent surgical intervention; however an unexpected perforation at an ulcerated segment of the tumor occurred following the procedure. This case highlights the importance of considering adenocarcinoma in differential diagnoses, as the patient's obstruction was initially missed due to a recurrent diagnosis of constipation, especially given the increase in incidence in the pediatric population.[5–8] It also underscores the critical role a multidisciplinary approach plays in managing such complex cases, with the potential to enhance patient outcomes.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

ETHICS STATEMENT

The patient's mother was provided with a comprehensive explanation about the potential implications of the publication, including the possibility of their identity disclosure despite all measures taken to ensure anonymity. The patient's mother was given sufficient time to contemplate their decision and any queries they had were addressed in detail. After thorough understanding, they willingly agreed to the publication of their case in the interest of medical research and knowledge dissemination. The consent was documented in writing, adhering to the ethical guidelines pertaining to patient data confidentiality and privacy, as set by our institution and the broader medical community. The original signed consent form is securely stored in the patient's medical records.

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