CLINICAL VIGNETTE

Rings Round the Colon: An Early Diagnosis of Signet Ring Cell Carcinoma of the Colon

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Introduction

Colorectal primary signet ring cell carcinoma (PSRCCR) accounts for less than 1% of colorectal cancer cases. PSRCCR most commonly arises in the stomach, but it can arise in the colon, prostate, rectum, and breast. Prognosis is poor as this cancer is usually advanced upon presentation.

Case Presentation

A 72-year-old male with myelodysplastic syndrome (MDS) and hemochromatosis presented to gastroenterology with a positive Cologuard stool test ordered by his hematologist. He reported constant fatigue from his MDS, for which he is transfusion dependent. He otherwise denied nausea, vomiting, abdominal pain, constipation, diarrhea, weight loss, early satiety, fevers, chills, melena, hematochezia, or rectal bleeding. His last colonoscopy was 5 years prior at an outside facility with polyps seen, though the exact appearance and final pathology were unknown. He denied a family history of colorectal cancers, and his only medication was deferasirox for his MDS. Social history was significant for a 25-pack-year history of smoking, though he quit 30 years prior. Physical exam and laboratory studies were unremarkable other than a hemoglobin of 8.5g/dL, which was at his baseline.

Clinical Course

Colonoscopy revealed a 30mm sessile polyp in the ascending colon (Figure 1). Surgical pathology revealed a 1.8cm, poorly differentiated signet-ring cell adenocarcinoma without lymphovascular invasion (Figure 2). Subsequent computed tomography scan (CT) of the chest, abdomen, and pelvis found no evidence of metastatic disease. Carcinoembryonic antigen (CEA) was slightly elevated at 5.3 ng/mL. He underwent right hemicolectomy to treat his stage IIA disease. Two months later, PET-CT showed no recurrence, and CEA level normalized at 2.7 ng/mL. Colonoscopy one year later showed no recurrence.

Discussion

PSRCCR of the colon is typically diagnosed at an advanced stage due to the late manifestation of symptoms. Up to a third of PSRCCR patients have metastatic disease upon presentation to local lymph nodes (86%) or the peritoneum (41%).[1] The tumor is histologically characterized by abundant intracyto-plasmic mucin and peripherally displaced nuclei, giving it the appearance of signet rings. Macroscopically, the tumor appears shrunken and rigid, often described as *linitis plastica.*

One hypothesis for the delayed presentation in PSRCCR is that the cancer spreads through the mucosa and spares mucosal surfaces, leading to fewer symptoms in the early stages. The propensity for peritoneal seeding is thought to be due to the excessive mucus production by the cancer cells, which enable the cells to enter the peritoneal cavity.[2,3] Treatment for PSRCCR is focused on surgical resection, neoadjuvant radio-therapy, and adjuvant radiochemotherapy.

Although diagnosis typically occurs at an advanced stage, this patient was diagnosed at an early stage due to his positive Cologuard test. Cologuard was the first stool-DNA screening test approved by the U.S. Food and Drug Administration in 2014. Cologuard includes fecal immunochemical testing (FIT) to detect presence of hemoglobin in the stool as well as colorectal cancer-related DNA mutations using nine bio-markers. In a trial that screened asymptomatic adults between 50 and 84 years of age, DNA stool testing was shown to be more sensitive than FIT in detecting colorectal cancer (92.3% vs. 73.8%, p 0.002).[4] Cologuard has been approved for colorectal cancer screening in average risk populations. In comparison, colonoscopies have a sensitivity of >95%.[5]

Because this patient had a history of polyps of unknown histology on prior colonoscopy five years before, he was not average risk and surveillance colonoscopy after three to five years, may have been recommended depending upon histology. Nevertheless, obtaining the positive Cologuard test resulted in colonoscopy, which identified early PSRCCR with surgical resection at Stage IIA without lymph node involvement or metastases. With early diagnosis, surgical resection will likely be curative for this rare tumor with poor prognosis. This case illustrates a rare circumstance of early detection and treatment of PSRCCR.

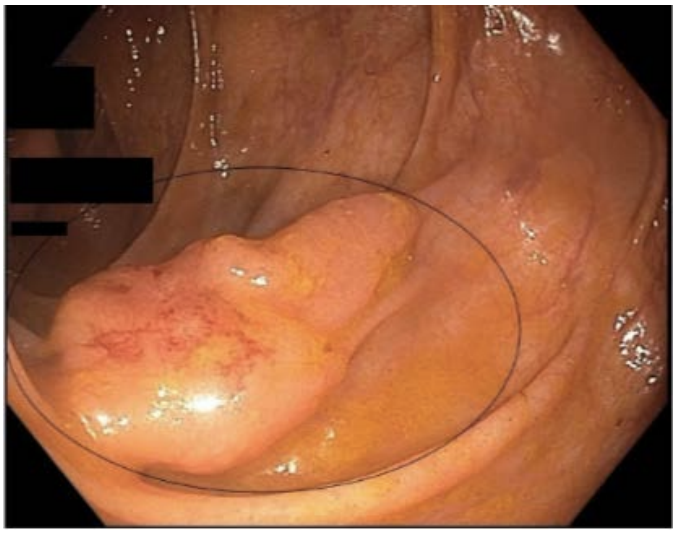

Figure 1.

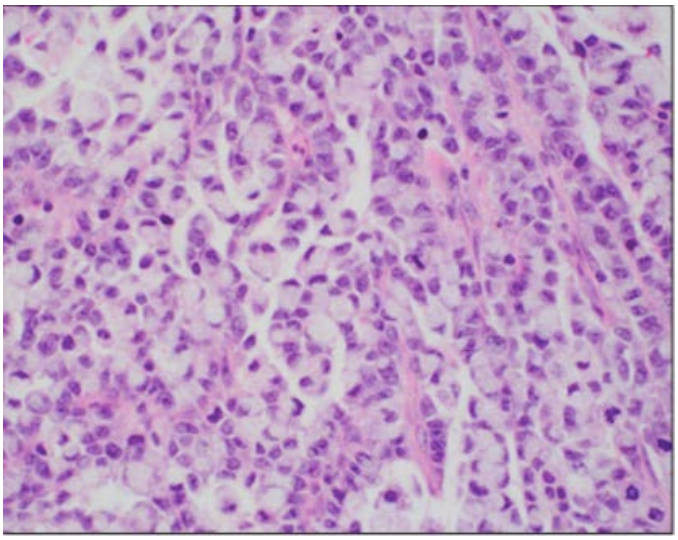

Figure 2.

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