

Pancreatic Cancer Solitary Metastasis to Colon is a Rare Entity

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ABSTRACT

Metastases in pancreatic ductal adenocarcinoma are present in over 50% of cases at the time of diagnosis, with the liver, peritoneum, and lung being some of the most common sites. By contrast, solitary distant metastasis to the colon is a rare entity but clinically significant. We report 2 cases of synchronous pancreatic ductal adenocarcinoma distant metastasis to colon along with a literature review. Our cases demonstrate the utility of colonoscopy to diagnose metastatic disease. Last, as highlighted, palliative stenting can be used in cases of complete obstruction.

KEYWORDS: pancreatic cancer; metastasis; obstruction; malignant large bowel obstruction; colonoscopy

INTRODUCTION

Pancreatic ductal adenocarcinoma (PDAC) is a leading cause of cancer-related deaths. Distant metastases commonly involve the liver, peritoneum, and lungs.^{1,2} Typically, if the colon is affected, it is due to direct invasion of the colon from the primary tumor.³ By contrast, isolated distant metastasis to the colon—i.e. without direct extension into the colon from primary pancreas tumor—is a rare but clinically significant entity. Lesions can be synchronous or metachronous at the time of diagnosis. Patients may be asymptomatic or present with malignant large bowel obstruction (MLBO). Although PDAC distant metastasis to the colon have been previously described and reviewed in the literature, we aim to highlight the role colonoscopy can play in diagnosis and management.^{4,5} Colonoscopy may aid in disease staging and impact treatment options. Furthermore, we demonstrate how palliative stenting may relieve obstructing symptoms.

CASE REPORT

Case 1: A 69-year-old woman with PDAC diagnosed at an outside hospital was referred for repeat colonoscopy after chemotherapy. Initially, she presented with epigastric pain radiating to the back and frequent small bowel movements. At diagnosis, she had a locally invasive mass extending to the stomach, celiac axis, and gastrohepatic ligament. Her CA 19-9 was 2,119 U/mL. A positron emission tomography computed tomography (CT) demonstrated bowel wall thickening and fluorodeoxyglucose avidity in the rectum in addition to the primary tumor. Colonoscopy showed a mass in the rectum with biopsy confirming PDAC. The patient then presented to our institution for a second opinion and was started on folinic acid, 5-fluorouracil, irinotecan, oxaliplatin to downstage her disease. She had a marked decrease in CA 19-9, and interval CT scans showed normal appearance of the colon including resolution of focal wall thickening in the rectum. After completing chemotherapy, she was re-evaluated for surgical resection; however, subsequent CT demonstrated new diffuse thickening of the colon suggestive of colitis, most severe in the rectum (Figure 1). On repeat colonoscopy, she was found to have an irregular narrowing in the rectum (Figure 1). Biopsies at the stricture site revealed microscopic foci of PDAC within colonic mucosa. Chemotherapy was reinitiated, and surgery was deferred.

Case 2: An 82-year-old man with a history of PDAC metastatic to the liver and left adrenal gland presented with a 1-month history of abdominal distension, constipation, and change in stool caliber. His treatment history was notable for progression of disease on

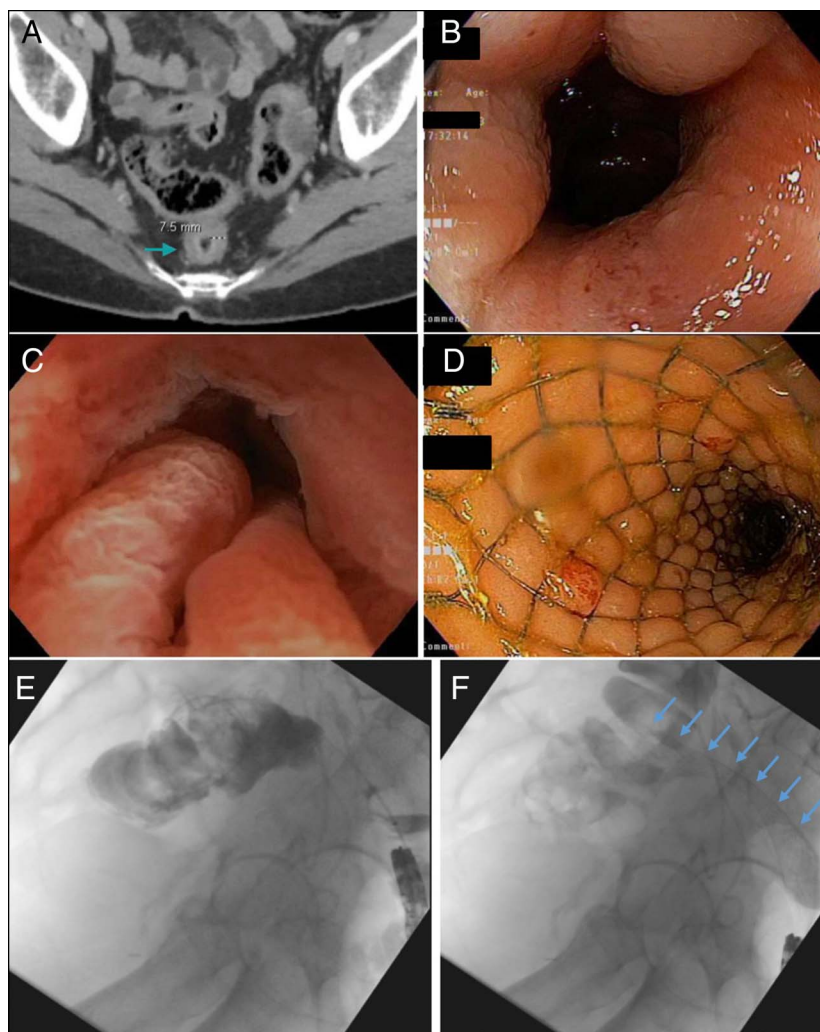


Figure 1. (A) Case 1—Computed tomography of the abdomen and pelvis with contrast demonstrating diffuse colonic wall thickening, most severe in segment extending to rectum (arrow). (B) Case 1—Colonoscopy showing irregular, nodular, and erythematous mucosa with narrowing measuring 1 cm × 1.5 cm in rectum 7 cm from anal verge. Biopsy demonstrated microscopic focus of adenocarcinoma involving colorectal mucosa. (C) Case 2—Flexible sigmoidoscopy view of severe intrinsic stenosis 15 cm proximal to the anus. It measured 7 mm (inner diameter). Abnormal villous/infiltrative-appearing tissue involving the area of stenosis circumferentially. Biopsies demonstrated pancreatic ductal adenocarcinoma. (D) Case 2—Endoscopic view after placement of 25 mm × 9 cm bare-metal stent traversing malignant stricture. Immediately on placement, excellent drainage of liquid stool and contrast media from upstream colon was observed. (E) Case 2—Fluoroscopy demonstrating malignant stricture approximately 2 cm in length with contrast in colon proximal to mucosal narrowing. (F) Case 2—Fluoroscopy after placement of bare-metal stent (arrows) traversing the area of stenosis. Good positioning upstream and downstream of stenosis.

several systemic chemotherapy regimens including nab-paclitaxel and gemcitabine, followed by fluorouracil and liposomal irinotecan with subsequent radiation therapy to the liver, pancreas, and left adrenal gland, followed by folinic acid, 5-fluorouracil, oxaliplatin. Initiation of pembrolizumab was planned at the time of presentation. The patient had a colonoscopy 18 months ago, which was notable only for a pedunculated tubulovillous adenoma in the sigmoid. An abdominal/pelvic CT with oral contrast now demonstrated a narrowed luminal caliber at the midsigmoid colon. Flexible sigmoidoscopy showed a severe intrinsic stricture at 15 cm from the anal verge with abnormal mucosa (Figure 1). Biopsies confirmed metastatic PDAC to the colon. He subsequently underwent colonoscopy with fluoroscopically-guided placement of

a bare-metal stent (Figure 1). Postprocedure, he had relief of obstructing symptoms. Unfortunately, he eventually perished due to other complications of his hospital course.

LITERATURE REVIEW

A Pubmed search for case reports of pancreatic adenocarcinoma metastatic to colon, was performed. The search strategy used on Pubmed was as follows: (“pancreatic cancer” OR “pancreatic adenocarcinoma”), AND (“metastasis” OR “metastases” OR “metastatic”) AND (“colon” OR “colonic” OR “large intestine” OR “large intestinal” OR “bowel” OR “rectal”). The earliest report found was from 2009. Non-English articles, cases of disseminated metastatic disease (>3 organs involved), and

Table 1. Descriptive statistics of literature review

Case #	Age	Sex	Timing	Site	Gastrointestinal obstruction	Diagnostic procedure	Other metastases at diagnosis	References
1	45	M	Synchronous	Ascending	No	Partial colectomy	No	Bellows C, et al. South Med J. 2009.
2	85	F	Metachronous	Sigmoid	Yes	Hartmann	No	Ogu U, et al. Am Surg. 2012.
3	62	M	Metachronous	Ascending	Yes	Partial colectomy	No	Inada K, et al. World J Gastroenterol. 2013.
4	64	M	Metachronous	Cecum	Yes	Partial colectomy	No	Kim W, et al. Clin Imaging. 2015.
5	67	F	Synchronous	Sigmoid	Yes	Exploratory laparotomy	Liver, peritoneum	Kelley K, et al. Am Surg. 2016.
6	70	F	Synchronous	Transverse, descending	No	Colonoscopy	Liver, peritoneum	Gizzi et al. Gastrointest Endosc. 2017.
7	60	M	Synchronous	Sigmoid	No	Colonoscopy	Peritoneum, iliac bone	Nogueira S, et al. Int J Surg Case Rep. 2018.
8	74	M	Synchronous	Ascending (within colon adenocarcinoma)	No	Colonoscopy, distal pancreatectomy, right hemicolectomy, partial liver resection, and lymph node dis-section.	No	Nakaya T, et al Int J Clin Exp Pathol. 2018.
9	67	M	Metachronous	Rectum	No	Colonoscopy	Liver	Ohara Y, et al. World J Surg Oncol. 2018.
10	63	M	Metachronous	Transverse, jejunum	No	Partial colectomy, jejunectomy	No	Miyasaka M, et al. Surg Case Rep. 2018.
11	91	F	Synchronous	Sigmoid	Yes	Partial colectomy	No	Kahl R, et al. ACG Case Rep J. 2019
12	73	F	Synchronous	Sigmoid	Yes	Partial colectomy	No	Park D, et al. BMJ Case Rep. 2019.
13	75	M	Metachronous	Rectum	No	Colonoscopy	No	Sun J, et al. Transl Cancer Res. 2020.
14	71	M	Synchronous	Descending, Sigmoid	No	Colonoscopy	Peritoneum	Yewale R, et al. ACG Case Rep J. 2020.
15	54	M	Synchronous	Sigmoid	No	Colonoscopy	Peritoneum	Vrakas S, et al. Clin Case Rep. 2021.
16	48	M	Synchronous	Sigmoid	No	Colonoscopy	Liver	Dong YM, et al. World J Clin Cases. 2021.
17	66	F	Synchronous	Sigmoid	Yes	Partial colectomy	Liver	Ardalan B, et al. Int J Surg Case Rep. 2022.
18	82	M	Synchronous	Rectum	No	Hartmann	No	O'Sullivan B, et al. Surg Case Rep. 2022.
19	71	M	Synchronous	Ascending	Yes	Partial colectomy	No	O'Sullivan B, et al. Surg Case Rep. 2022.
20	60	M	Synchronous	Sigmoid	No	Colonoscopy	Liver	AlAli M, et al. Cureus. 2022.
21	78	M	Synchronous	Sigmoid	Yes	Partial colectomy	Liver	Pacheco F, et al. Int J Surg Case Rep. 2023.
22	65	M	Synchronous	Sigmoid	No	Colonoscopy	Liver, peritoneum	Meng N, et al. Onco Targets Ther. 2023.
23	71	M	Metachronous	Rectum	No	Colonoscopy	No	Chen S, et al. Medicine (Baltimore). 2023.
24	80	M	Synchronous	Ascending, sigmoid, rectum	No	Colonoscopy	No	Omatsu R, et al. Clin J Gastroenterol. 2024.
25	69	F	Synchronous	Rectum	No	Colonoscopy	No	Reported here
26	81	M	Metachronous	Sigmoid	Yes	Colonoscopy	Liver, left adrenal	Reported here
Statistics	Total # cases	Mean age	Male (%)	Synchronous (%)	Most common site (%)	Gastrointestinal obstruction (%)	Colonoscopy for Dx	Without other metastatic disease
2009–2024	26	69	19 (73%)	18 (69%)	14 (54%) sigmoid	10 (38%)	14 (54%)	14 (54%)
Data reported include age, sex, whether colon metastases were synchronous or metachronous with primary pancreas tumor, anatomic site of metastases, whether patients had signs or symptoms of obstruction, how the diagnosis was confirmed (endoscopy vs surgery), and site of other extranodal metastases (if any). Findings summarized with descriptive statistics as above.								

cases where colon involvement was direct invasion per description were excluded. Data reported include age, sex, whether colon metastases were synchronous or metachronous with primary pancreas tumor, anatomic site of metastases,

whether patients had signs or symptoms of obstruction, how the diagnosis was confirmed (endoscopy vs. surgery), and site of other extranodal metastases (if any). This review identified 23 reports of 24 additional cases of PDAC with metastasis to

the colon (Table 1) from 2009 to 2024. The mean age of patients was 69 years, with 73% male. Most patients were asymptomatic, but 38% had signs or symptoms consistent with bowel obstruction. The sigmoid colon was by far the most common site, affected in more than half of cases. Interestingly, more than half of patients presented with synchronous colonic lesions at the time of diagnosis (69%), and approximately half of all cases (54%) had no other distant metastases at the time of diagnosis.

DISCUSSION

Unfortunately, overall prognosis in PDAC remains poor and approximately 50% of cases are metastatic at the time of diagnosis. Cross-sectional and positron emission tomography imaging are part of the standard diagnostic evaluation.⁶ By contrast, colonoscopy is not routinely used for staging of PDAC as the colon is an uncommon site for distant metastasis without direct invasion. In one study of 130 autopsy cases of metastatic PDAC, 5 cases demonstrated metastatic lesions in the intestines.⁷ Another large autopsy study on the metastatic patterns of cancers found 4 cases of colonic involvement in a series of 109 patients with metastatic pancreatic cancer.⁸ One limitation of prior autopsy studies is that they do not describe PDAC colon metastases cases individually.

Our review of the literature provides further insight into PDAC metastases to the colon. While rare, synchronous metastases to the colon frequently occurred without other distant metastases, resulting in significant implications at diagnosis. For example, our case 1 initially appeared to have borderline resectable disease until colonoscopy demonstrated abnormalities in the rectum and biopsy confirmed distant PDAC metastases which upgraded the disease to stage 4. Of note, the patient had imaging findings suggestive of colitis after receiving chemotherapy, but colonoscopy revealed irregular rectal mucosa and persistent PDAC involvement on biopsy which shaped management. Therefore, a high index of suspicion for colon metastases—even with nonspecific imaging findings—is needed, as further investigation may ultimately alter staging and management. Given the implications of a colonic lesion on otherwise local-regional disease, it may be reasonable to routinely offer colonoscopy in patients with resectable PDAC and colon abnormalities on cross-sectional imaging.

Furthermore, over one-third of cases in our literature review suffered from MLBO at presentation. Many patients ultimately underwent subtotal colectomy as part of their management. In case 2, our patient was found to have a MLBO, treated with a bare-metal stent. The use of self-expanding metal stents in MLBO has long-been studied. A 2014 meta-analysis including observational and randomized control trials from 2003 to 2012 found palliative stenting to have a somewhat lower clinical effective rate compared with surgery, but palliative stenting yielded significantly lower 30-day mortality, shortened length

of stay, time to chemotherapy, and rate of stoma creation.⁹ A more recent observational study compared stent placement with stoma creation, at 30-days and 1-year, supporting the safety and quality of life benefits of palliative stenting.¹⁰ A 2017 randomized control trial comparing stent insertion vs. surgical decompression in MLBO demonstrated faster return to diet, decreased stoma rates, reduced postprocedure stay, and some quality-of-life benefits in the stent insertion group.¹¹ Current European Society of Gastroenterology Guidelines recommend colonic stenting as the preferred treatment for palliation of MLBO (strong recommendation, high quality of evidence).¹² An important limitation is that the data mostly originate from primary colorectal cancer literature.

In summary, PDAC solitary metastasis to the colon without direct invasion from the pancreas or known peritoneal disease is a rare entity. Our 2 cases expand the literature by demonstrating the utility of colonoscopy to diagnose metastatic disease. Synchronous colonic lesions in PDAC pose a diagnostic challenge, as subtle imaging findings may represent malignancy. As highlighted, colon metastases may lead to strictures with MLBO, and bare-metal stenting may serve as a palliative option. Although rare, PDAC metastasis to the colon can occur, and a high index of clinical suspicion is necessary to confirm the diagnosis as it can alter staging and management of these complex patients.

DISCLOSURES

Author contributions: AA Rodriguez: manuscript drafting, editing, literature review and interpretation. S. Vedantam and CJ Acosta: manuscript editing, literature review and interpretation. S. Bhalla: conception, manuscript editing, literature review and interpretation. JA Barkin: conception, design, manuscript editing, literature review and interpretation and is the article guarantor.

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