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Two Histologically Different Primary Malignancies: Synchronous Obstructive Descending Colon Adenocarcinoma and Appendicular Carcinoid Tumor

Authors' Contribution:

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Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
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Conflict of interest: None declared

Patient: Female, 29-year-old
Final Diagnosis: Synchronous gastrointestinal carcinoid tumor and colon adenocarcinoma
Symptoms: Abdominal distension • abdominal pain • obstipation
Medication: —
Clinical Procedure: Colectomy • laparoscopic colectomy • total colectomy
Specialty: Gastroenterology and Hepatology • Surgery

Objective: Unusual clinical course
Background: Synchronous primary tumors are defined as 2 or more different histological tumors discovered in one patient at the same time or within a period of 6 months. Colorectal cancer is one of the most common cancers in the United States. Inversely, synchronous colorectal cancer and carcinoid tumors are rare. Carcinoid tumors can be classified into functioning and non-functioning tumors. Carcinoid tumors are steadily increasing in incidence. There is only 1 case reported in the literature as synchronous colorectal cancer and appendicular carcinoid. The difficulty is to manage 2 different types of malignancies at the same time. An optimal medical or chemotherapy strategy is needed.

Case Report: A 29-year-old woman presented to the emergency room carrying with her computerized tomography (CT) abdomen and pelvic images showing bowel obstruction. Investigations confirmed an obstructing descending colon mass. She underwent colonoscopic stenting as emergency treatment with multiple biopsies. The pathology report came back positive for adenocarcinoma, and we planned to proceed with surgery. Intraoperatively, she was found to have an appendicular mass. The surgical team decided to proceed with laparoscopic-assisted subtotal colectomy. The postoperative course was uneventful, with no complications. The patient was discharged on postoperative day 6 in stable condition.

Conclusions: Synchronous colorectal cancer and carcinoid tumors are rare malignancies. The challenge is to find an optimal medical or chemotherapy strategy to manage both malignancies.

MeSH Keywords: Appendiceal Neoplasms • Carcinoid Tumor • Colonic Neoplasms • Neoplasms, Multiple Primary

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Background

Synchronous primary tumors are defined as 2 or more different histological tumors discovered in one patient at the same time or within a period of 6 months. This is different from metachronous tumors, which by definition should be diagnosed after the specified period [1]. The term “multiple primary tumors” has a long history. In 1921, 4.7% of all reported cases were malignancies with multiple growths. Interestingly, the prevalence rate is increasing in recent reports, reaching 17% in some studies [2], which may be due to the use of advanced diagnostic methodology, resulting in longer patient survival and an increase in the number of cancer survivor patients [1].

Case Report

A 29-year-old woman presented to the emergency room reporting colicky progressive abdominal pain associated with abdominal distension, intermittent vomiting, and obstipation for 14 days. She also gave a history of loss of appetite and undocumented weight loss. The patient brought a computerized tomography (CT) abdomen and pelvic images and her report showed an obstructive left colon mass. There was a positive family history of breast cancer on her mother’s side of the family. In examination, the patient was tachycardic, with heart rate up to 120 bpm. She looked generally unwell. Moreover, the clinical exam revealed abdominal distension, tympanic by percussion, with rectum empty of stool. Results of laboratory examinations were unremarkable except for a high CEA (218 ng/mL).

Erect and supine abdominal X-rays showed multiple air-fluid levels and bowel dilatation with no air below the diaphragm. The patient stayed nothing by mouth (NPO), with intravenous (IV) hydration and nasogastric tube (NGT) decompression. CT abdomen and pelvic images were reviewed with the radiologist, and a circumferential descending colon mass with multiple regional lymph nodes and proximal dilatation were found (Figure 1). After resuscitation, the gastroenterology team was consulted for colonoscopy and possible stenting, which was done, reporting a fungating descending colon mass obstructing the lumen, and multiple biopsies were taken. Under guide wire, a 9-cm uncovered stent was inserted and stool started to come through it (Figure 2). After the procedure, erect abdominal X-ray showed no signs of perforation (Figure 3). The patient had bowel movements and tolerated oral diet.

The pathology report of colonoscopy biopsies came back positive as moderately differentiated adenocarcinoma with infiltration of the muscularis mucosa. CT chest and magnetic resonance imaging (MRI) abdomen examinations were done as a part of staging, and both were unremarkable for metastasis. The patient was scheduled for a laparoscopic left hemicolectomy. Intraoperatively, there was

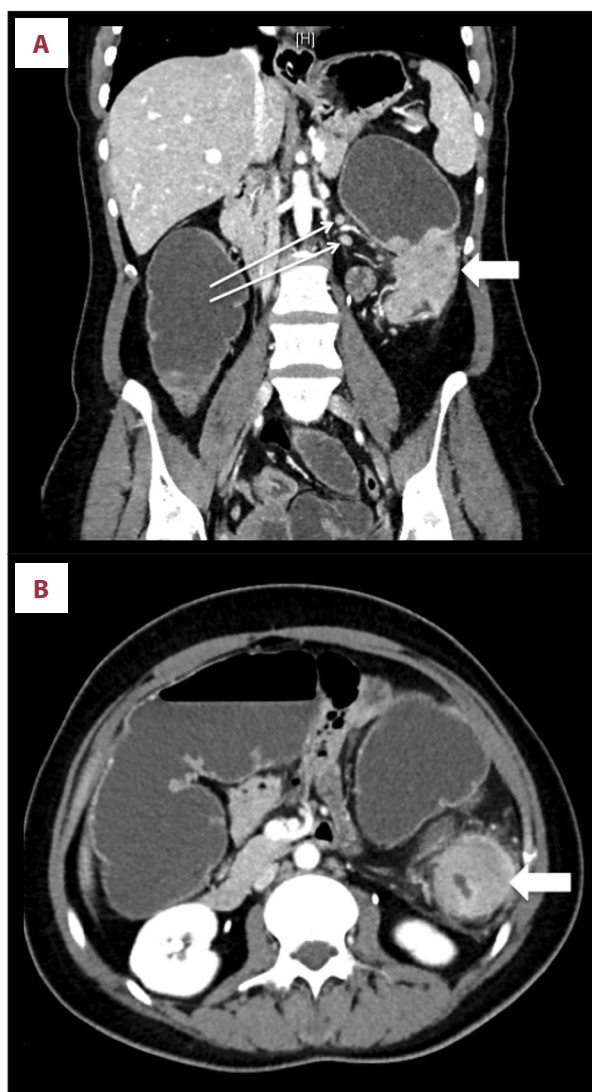


Figure 1. CT scan of the abdomen showing: (A) Coronal view of circumferential wall thickening of the descending colon (large arrows) associated with small regional lymph nodes (long arrows); (B) Axial view of circumferential wall thickening of the descending colon (large arrows) with mild luminal narrowing.

a descending mass with inflammatory tissue around it. The incidental finding of an appendicular mass at the base was identified with dilated appendix and signs of inflammation. The surgical team decided to proceed with laparoscopic-assisted subtotal colectomy with ligation of left colic, middle colic, right colic, and ileocolic arteries and primary ileocolic anastomosis. The postoperative course was smooth, with no complications. The patient was discharged on postoperative day 6 in stable condition.

The resected large bowel was 75 cm in length with a circumferential left colon mass. The metal stent identified and stabilized the mass. The appendix measured 6×1.5 cm, with a heterogeneous

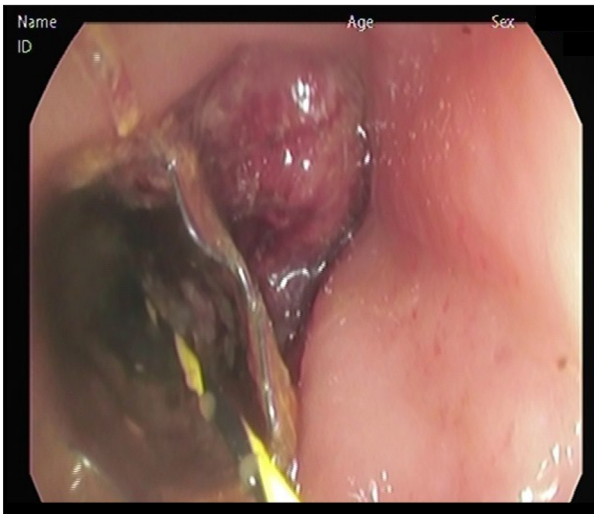


Figure 2. Colonoscopy image confirmed an obstructive colon mass. An uncovered stent was placed over the guide wire.



Figure 3. Plain X-ray abdomen erect view showing radio-opaque colonic stent (arrows) and nasogastric tube with small non-specific air-fluid levels.

yellow-tan firm mass. Surgical pathology reported the following: moderately differentiated left colon mass measuring 11.0 cm in greatest dimension with invasion through the muscularis propria into the pericolic tissue (Figure 4). Lympho-vascular invasion was present. There were 28 lymph nodes identified; all were negative for metastases. Left colon adenocarcinoma was labeled as pT3, N0, Mx. Regarding the appendix mass, well-differentiated neuroendocrine tumor was positive for chromogranin and synaptophysin (Figure 5). There was invasion to the serosa and mesoappendix. Lympho-vascular invasion was also present. Two lymph nodes out of 28 were positive for neuroendocrine tumor. Appendicular carcinoid was labeled as pT3, N1, Mx. The case was discussed at the multidisciplinary tumor board meeting and the decision was made to proceed with adjuvant chemotherapy since the patient was classified as high-risk after the octreotide scan. The scan was done and reported as negative.

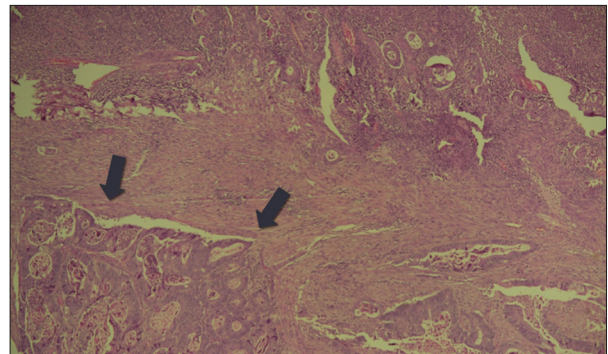


Figure 4. Moderately differentiated adenocarcinoma in the colon (large arrows).

A CT abdomen scan was reviewed postoperatively for the appendix finding. The radiologist labeled the appendix as a borderline appendix with no obvious appendicular mass (Figure 6).

Patient was seen in the clinic one year after the surgery. She had completed the adjuvant chemotherapy cycles with no significant complications. She is tolerating regular diet with 2 bowel motions per day. CT scans and colonoscopy were done as part of the follow up, and both were unremarkable.

Discussion

Colorectal cancer is one of the most common cancers in the United States. Based on American Cancer Society estimation for the new cases of 2018, colorectal cancer had the third highest incidence and was the leading cause of death in males and females among all malignancies [3]. However, in Saudi Arabia, colorectal cancer is the most common male malignancy and the third most common in females according to the Saudi Cancer Registry in 2014 [4]. Inversely, synchronous colorectal cancer and carcinoid tumors have low incidence. Synchronous colorectal cancer has an incidence rate of 2.6% [5]. Carcinoid tumors accounted for 0.66% of all malignancies in The Surveillance Epidemiology and End Results (SEER) database from 1973 to 2004. In contrast to all other malignancies with steady incidence rates, carcinoid tumors are increasing by 3–10% per year according to the SEER database [6,7].

Carcinoid tumor is a neuroendocrine tumor, described as malignant solid cells derived from neuroendocrine secretory cells [7]. Most (55%) carcinoid tumors have a gastrointestinal neuroendocrine source. The gastrointestinal site is mainly small bowel (45%), then rectum (20%), followed by 17% in the appendix [8].

Carcinoid tumors can be classified into functioning and non-functioning tumors. The non-functioning tumor is present usually as an incidental mass with or without compression symptoms. The functioning tumor is present with systemic

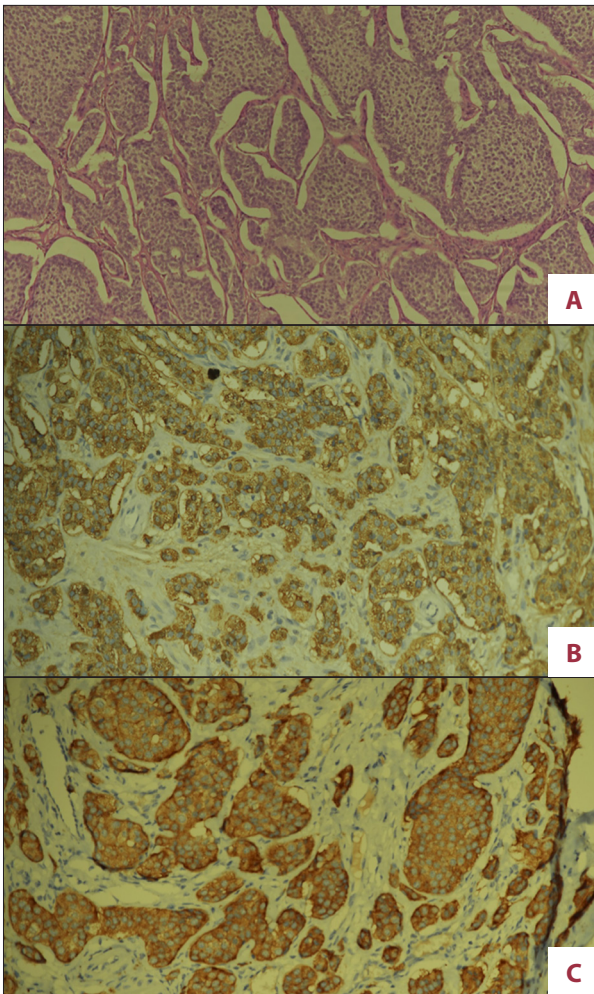


Figure 5. Neuroendocrine tumor of the appendix, Grade 1. (A) Insular growth pattern of solid islands of uniform polygonal cells with minimal pleomorphism, retraction of peripheral tumor cells from stroma. The neuroendocrine tumor is positive for (B) chromogranin and (C) synaptophysin.

symptoms secondary to active vasoactive substance secretion by the tumor cells, such as serotonin. They usually occur after distant metastatic cells secrete these substances into the systemic circulation, causing symptoms of carcinoid syndrome, which are flushing, diarrhea, bronchoconstriction, and palpitation. Moreover, it can lead to myocardial and valvular damage due to excessive serotonin levels [7,9].

The mainstay of carcinoid management is to achieve complete resection of all tumor cells. If curative surgery is not possible, debulking surgery, radiofrequency ablation, hepatic artery embolization, somatostatin analogues, or chemotherapy are all options to achieve symptom and biochemical control as much as possible [9]. The difficulty is to manage 2 different types of malignancies at the same time. An optimal medical



Figure 6. CT scan of abdomen coronal image showing borderline appendix (arrow).

or chemotherapy strategy with the most therapeutic effect for both malignancies and minimal adverse effects and toxicity is needed [2].

There is only 1 case reported in the literature as synchronous appendicular carcinoid tumor with colon adenocarcinoma, which was in a young female with obstructive left colon mass and incidental finding of appendicular mass, managed with total colectomy, as in our case [10]. Furthermore, Byoung-Chul Lee et al. [5] discussed the debate between multiple regional resections and extensive resection in synchronous colorectal cancer. They found that the approach of extensive resection is commonly used and preferred by surgeons in case of left and right colon lesions. However, there is controversy regarding treatment of right colon and rectum synchronous lesions, with superiority of 2 regional resections regarding functional bowel movements.

Conclusions

Synchronous colorectal cancer and carcinoid tumors are rare malignancies. Debate continues regarding the surgical approach between multiple resections versus extensive resection. The challenge is to find an optimal medical or chemotherapy strategy to manage both malignancies.

Conflicts of interest

None.

References:

1. Jena A, Patnayak R, Lakshmi AY et al: Multiple primary cancers: An enigma. *South Asian J Cancer*, 2016; 5(1): 29–32
2. Vogt A, Schmid S, Heinimann K et al: Multiple primary tumours: Challenges and approaches, a review. *ESMO Open*, 2017; 2(2): e000172
3. Siegel RL, Miller KD, Jemal A: Cancer statistics, 2018. *Cancer J Clin*, 2018; 68(1): 7–30
4. Cancer incidence report. Saudi Health Council, Saudi Cancer Registry 2014. <https://nhic.gov.sa/eServices/Documents/2014.pdf>
5. Lee BC, Yu CS, Kim J et al: Clinicopathological features and surgical options for synchronous colorectal cancer. *Medicine (Baltimore)*, 2017; 96(9): e6224
6. Gustafsson BI, Kidd M, Modlin IM: Neuroendocrine tumors of the diffuse neuroendocrine system. *Curr Opin Oncol*, 2008; 20(1): 1–12
7. Öberg KE: Gastrointestinal neuroendocrine tumors. *Ann Oncol*, 2010; 21(Suppl. 7): Vii72–ii80
8. Pinchot SN, Hohen K, Sippel RS, Chen H: Carcinoid tumors. *Oncologist*, 2008; 13(12): 1255–69
9. Kocha W, Maroun J, Kennecke H et al: Consensus recommendations for the diagnosis and management of well-differentiated gastroenterohepatic neuroendocrine tumours: A revised statement from a Canadian National Expert Group. *Curr Oncol*, 2010; 17(3): 49–64
10. Mohammadipour S, Hosseini M. Two-type synchronous colonic adenocarcinoma with appendiceal carcinoid. *Eur J Surg Oncol*, 2012; 3(1): 28–32