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Primary Neuroendocrine Carcinoma of the Transverse Colon

Ergin Erginöz[1], Marika Nakashidze[2], Necip Serdar Yüceyar[1], Salih Pekmezci[1], Murat Süphan Ertürk[1]

[1]Department of General Surgery, İstanbul University Cerrahpaşa, Cerrahpaşa School of Medicine, İstanbul, Turkey
[2]Department of Internal Medicine, İstanbul University Cerrahpaşa, Cerrahpaşa School of Medicine, İstanbul, Turkey

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Abstract

Neuroendocrine tumors are the proliferation of neuroendocrine cells that are known to be highly aggressive with a high mortality rate. The vast majority are seen within the small intestine and rectum. Rarely, within the colon, they are observed in the cecum or the ascending colon. In this case, a 66-year-old woman presented to the clinic with chronic fatigue and constipation. Work-up of the patient led to the diagnosis of an ulcerating mass within the mid-transverse colon, a highly unlikely location, where the biopsy revealed neuroendocrine carcinoma. Extended right hemicolectomy and ileotransversostomy were performed, and the pathological report was consistent with primary neuroendocrine carcinoma. These tumors are usually observed in the elderly population and are detected at an advanced stage. Routine colonoscopic examinations should therefore be performed for early diagnosis and management.

Keywords: Neuroendocrine tumor, transverse colon, colon cancer

Introduction

Neuroendocrine carcinoma of the colon and rectum is a rare type of colonic neoplasm accounting for less than 1% of all colorectal malignancies combined.[1] They are usually extremely aggressive tumors with a high mortality rate and a poor prognosis.[2,3] Although uncommon, these tumors are detected more frequently due to the widespread use of screening colonoscopy. These tumoral growths arising from neuroendocrine cells can occur anywhere in the body, and they are most commonly seen within the gastrointestinal system. Among the gastroenteropancreatic neuroendocrine tumors, the small intestine and rectum are the commonly occurring sites.[4] Colonic neuroendocrine tumors are quite rare, and they mostly tend to arise from the cecum or the ascending colon.[5] In this report, we present a rare case of a neuroendocrine tumor arising from the mid-transverse colon, which is an unusual location for these tumors to be detected.

Case Presentation

A 66-year-old woman presented to the outpatient clinic with a complaint of chronic fatigue and constipation of 1 year in duration. She did not have any accompanying symptoms, and the complete physical examination was normal. Past medical and family history was unremarkable. The laboratory parameters and tumor markers were normal except for microcytic anemia (hemoglobin 8.8 g/dL, MCV 73.1 fl) and a C-reactive protein value of 7.2 mg/L. The colonoscopic examination was considered, and a circumferential, ulcerating mass of 5 cm in length was observed in the transverse colon (Figure 1), and the biopsy result was consistent with neuroendocrine carcinoma. The abdominal computerized tomography (CT) revealed a 1 cm colonic wall thickening in the 5 cm segment of the transverse colon with spiculated infiltrations to the perilesional fat tissue (Figure 2). Lymphadenopathy was also observed within the vicinity. The pre-operative thorax CT included a few non-specific nodules of 3 mm size in the left lung. Extended right hemicolectomy and ileotransversostomy were performed and the pathologic report was consistent with a primary neuroendocrine carcinoma, T4aN1b (Figure 3). The Ki-67 index of the colon was 60%. She took 12 cycles of folinic acid, fluorouracil, and oxaliplatin (FOLFOX regimen) as chemotherapy. After her 1-year follow-up, the chromogranin A level was 116.8 ng/mL, and the ^{68}Ga-DOTA-TATE PET/CT scan was taken, which showed increased metabolic activity of nearly 8 mm size within the pancreatic tail. Prior to pancreatic tumor resection, a fine-needle aspiration biopsy (FNAB) was performed on the nodular lesion located in the pancreatic tail reaching the splenic hilus. The cytopathology of FNAB was consistent with a metastasis of a malignant epithelial tumor. An abdominal magnetic resonance imaging (MRI) showed a

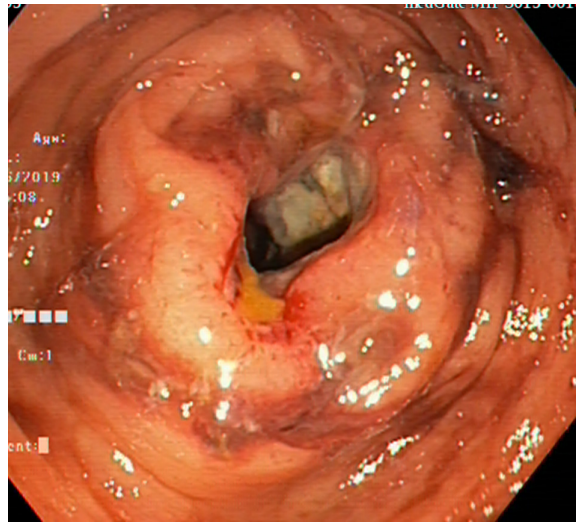

Figure 1. The colonoscopic image of a circumferential mass within the mid-transverse colon.

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Corresponding author: Ergin Erginöz, Department of General Surgery, İstanbul University Cerrahpaşa, Cerrahpaşa School of Medicine, İstanbul, Turkey
e-mail: eerginoz@ku.edu.tr
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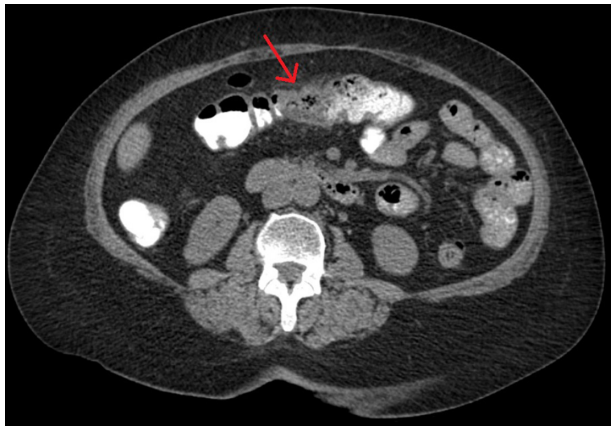

Figure 2. The computerized tomography shows wall thickening (red arrow) in the transverse colon.

nodular lesion within the pancreatic tail without any pathology in the liver. Distal pancreatectomy and splenectomy were performed, and the pathologic report was consistent with a mixed neuroendocrine carcinoma and adenocarcinoma of the pancreatic tail. The patient was referred to the medical oncology clinic once more to receive another 12 cycles of the FOLFOX regimen. Informed consent was obtained from the patient for the publication of this case report and accompanying images.

Discussion

Neuroendocrine tumors of the colon and rectum arise from the enterochromaffin cells, or Kulchitsky cells, which are found within the gastrointestinal tract in the Lieberkühn crypts.[5] Their clinical presentation is often nonspecific and depends on the location of the tumor. Abdominal CT or MRI, together with colonoscopy, is often sufficient to diagnose and stage neuroendocrine tumors.[5] Surgical resection is usually the treatment option of choice and data regarding the effectiveness of adjuvant therapy are insufficient as it has not shown to improve overall survival and cancer-specific survival.[6] Positive prognostic factors include the absence of metastatic disease, the presence of an adenocarcinoma component within the tumor, which was observed in this case, and response to chemotherapy.[2]

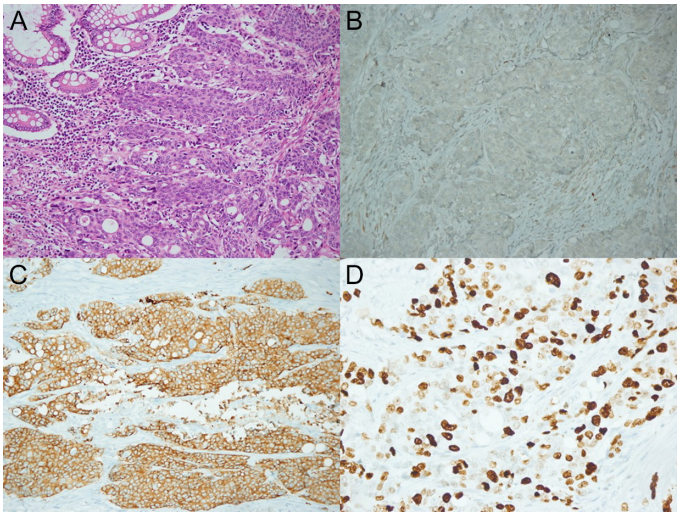

Figure 3. A-D. (A) Neuroendocrine carcinoma adjacent to normal colonic mucosa (H&E, 200× magnification), (B) absence of staining with chromogranin antibody in tumor cells (ABC method, 200× magnification), (C) tumor cells were positive with synaptophysin in the immunohistochemical study, (D) The Ki-67 proliferation index of 60%.

Colorectal neuroendocrine neoplasms are classified into 3 different categories as well-differentiated neuroendocrine tumor (NET), poorly differentiated neuroendocrine carcinoma (NEC), and mixed neuroendocrine-non-neuroendocrine adenocarcinoma (MINEN).[7] When the number of mitoses in the tumor is above 20/10 high power field and the rate of Ki-67 proliferation index is above 20%, the tumor is considered a neuroendocrine carcinoma.[7] Well-differentiated neuroendocrine tumors display enter ochromaffin-cell features such as insular structure, serotonin production, and CDX2 positivity.[8] These are aggressive tumors that may metastasize to liver, lymph nodes, mesentery, and peritoneum at the time of diagnosis.[9] In addition, tumor cells are more atypical in neuroendocrine carcinomas, which may be accompanied by central necrosis and single-cell necrosis. Neuroendocrine carcinoma can also be divided into 2 subclasses according to the large cell and small cell components.

According to the SEER (Surveillance, Epidemiology and End Results, USA) registry, the colonic neuroendocrine tumor incidence has increased from 0.02 per 100 000 in the year 1973 to 0.2 per 100 000 in 2004.[10] Patients usually present in their seventh decade with the mean age of presentation of 58 years, and it is twice more likely to be seen in females compared to males, as observed in this case.[11,12] Neuroendocrine tumors are most frequent in the rectum (94.5%) and rarely observed within the colon (3.9%).[12] Within the colon, the NETs are frequently encountered in the cecum (69.6%), which is followed by the sigmoid colon (13.0%), ascending colon (13.0%), and transverse colon (4.3%).[13]

Neuroendocrine tumors of the colon are uncommon and their location within the transverse part of the colon is even rarer. Neuroendocrine carcinoma of the colon is located most frequently on the right colon and can remain asymptomatic, owing to the fact that the left colon has a smaller lumen and intraluminal tumors may lead to earlier clinical presentation such as obstruction. The majority are associated with lymph node metastasis at the time of diagnosis and the 5-year overall survival is 40%-70% with a median survival of 36 months.[14-16]

Neuroendocrine carcinoma of the transverse colon is a rare entity encountered within the gastrointestinal system. Patients usually remain asymptomatic, and the disease is detected at an advanced stage at the time of diagnosis. It is more prevalent in the elderly age population; therefore, a routine colonoscopic examination should be performed in order for earlier detection of the tumor.

Informed Consent: Written informed consent was obtained from patient who participated in this study.

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