Successful Treatment of Primary Jejunal Cancer after Esophageal and Colon Cancer Resection

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Successful Treatment of Primary Jejunal Cancer after Esophageal and Colon Cancer Resection

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Abstract

Patients with esophageal cancer are susceptible to other primary cancers, but multiple primary cancers involving the esophagus and jejunum are rare. We herein report a case of primary jejunal cancer as a component of metachronous triple primary cancers including esophageal cancer and ascending colon cancer. A 63-year-old male patient with a history of surgery for esophageal cancer and ascending colon cancer was admitted to our hospital after experiencing 1 month of repeated vomiting and epigastric abdominal pain. Esophagogastrroduodenoscopy, duodenography, and computed tomography revealed a jejunal tumor located 2 cm from the ligament of Treitz on the anal side. Partial resection of the jejunum with lymph node dissection was performed. The postoperative course was uneventful, and the patient remains well with no signs of recurrence 10 months after the operation. This is the first report of curative resection of triple primary cancers of the esophagus, jejunum, and colon. Patients with a history of esophageal cancer are susceptible to other primary cancers, and it is important to perform surveillance for the subsequent development of other cancers.

Key words: Jejunal cancer • Esophageal cancer • Triple primary cancers

Introduction

Primary jejunal cancer is quite rare among gastrointestinal cancers and is usually difficult to adequately diagnose because of its anatomical site\(^1\). Because the diagnostic procedure is complicated and unusual, primary jejunal cancer is often diagnosed in its far advanced stage.

On the other hand, esophageal cancer is the eighth most common malignancy and the sixth most common cause of cancer death worldwide\(^2\). The prognosis for patients with esophageal carcinoma has been prolonged by improvements in diagnostic procedures and multimodal treatments, including perioperative management. It is well known that patients with esophageal cancer are susceptible to other primary cancers, such as head and neck, gastric, lung, and colorectal cancers\(^3\). In terms of treatment, the presence of other primary cancer synchronously or metachronously with esophageal cancer introduces management difficulties. Surgical resection may be
more hazardous and complicated owing to adhesions associated with previous operations and the limited availability of reconstruction organs. Early detection of other primary cancers is very important for adequate treatment of these patients.

We experienced a patient with primary jejunal cancer and a history of previous esophageal cancer and colon cancer. The patient underwent successful surgical treatment of all three cancers.

Case

A 63-year-old male patient was admitted to our hospital after experiencing 1 month of repeated vomiting and epigastric abdominal pain. The patient had chronic atrial fibrillation and a history of surgery for esophageal cancer and colon cancer 6 and 8 years previously, respectively. The patient was placed on a drip that improved his symptoms. Laboratory findings were unremarkable with the exception of leukocytosis (9,600/µl) and serum amylase elevation (2427 IU/l). Computed tomography (CT) revealed intestinal wall thickening at the proximal jejunum with surrounding small nodules suggestive of lymph node swelling (Fig. 1a). Cholecystolithiasis with no signs of cholecystitis was also found. Esophagogastroduodenoscopy revealed an encircled elevated tumor, 3 cm in length, located 10 cm from the ampulla of Vater on the anal side and a small nodule, 1 cm in length, located beside the encircled tumor (Fig. 1b). Pathological examination of the biopsy specimen showed moderately to well-differentiated adenocarcinoma. Duodenography revealed an encircled type 2 tumor, 3 cm in length, and a small nodule 2 cm from the ligament of Treitz on the anal side (Fig. 1c). 18-Fluoro-deoxyglucose positron emission tomography showed elevated 18-fluoro-deoxyglucose uptake (maximum standardized uptake value, 11.4) in the lesion. We performed partial resection of the jejunum with surrounding lymph node dissection and end-to-end anastomosis by a circular stapler as previously described3. The jejunal tumor with serosal invasion was identified 2 cm from the ligament of Treitz on the anal side (Fig. 2a). First, the ligament of Treitz was divided, and the first and second jejunal arteries and veins were carefully exposed and taped (Fig. 2b). Because the tumor was fed by the first jejunal artery, the first jejunal artery and vein were ligated and cut. Partial resection of the proximal jejunum containing the tumor and dissection of the surrounding lymph nodes was then performed. The proximal stump was closed after inserting the anvil of the anastomosis instrument, and the distal stump was closed by a linear stapler (Fig. 2c). The shaft of the anastomosis instrument was inserted from a jejunotomy created 20 cm distal to the jejunal stump, and end-to-end anastomosis was finally completed (Fig. 2d). Cholecystectomy were also performed.

Macroscopically, two independent tumors (tumors 1 and tumor 2) were observed in the resected specimen (Fig. 3a). Microscopic examination of the tumor 1 showed moderately to well-differentiated adenocarcinoma invading the serosa of the small intestine and microscopic examination of tumor 2 showed well-differentiated adenocarcinoma present only in the mucosal layer of the small intestine (Fig. 3b and d). The postoperative course was uneventful with the exception of intraperitoneal bleeding from the orifice of the drainage tube, which was treated conservatively. Because the pathological examination revealed invasion of the tumor into the serosa and metastasis of cancer cells to 1 of the 13 resected lymph nodes, adjuvant chemotherapy with S-1 was begun. The patient was healthy with no recurrence 10 months after the operation.

Discussion

Multiple primary malignancies are classified based on the definitions proposed by Warren and Gates. Briefly, tumors must be defined as malignant by histologic examination, the tumors must be separated from each other, and the possibility of metastasis must be excluded5. In the present
Fig. 1  Preoperative findings of the jejunal cancers
a. Computed tomography (CT) revealed intestinal wall thickening (arrowhead) at the proximal jejunum with surrounding small nodules suggestive of lymph node swelling (**superior mesenteric artery, ***superior mesenteric vein.

b. Esophagogastroduodenoscopy revealed an encircled elevated tumor (arrow), 3-cm long, and a small nodule (arrow head), 1-cm long, located beside the encircled tumor.

c. Duodenography revealed an 3-cm-long, encircled type 2 tumor (arrow), and a small nodule (arrow head) 2 cm from the ligament of Treitz on the anal side.

Fig. 2  Intraoperative views
a. The jejunal tumor with serosal invasion (arrow) was identified 2 cm from the ligament of Treitz on the anal side. The arrowheads indicate the ligament of Treitz.

b. The ligament of Treitz was divided, and the first (arrow) and second (arrowhead) jejunal arteries were carefully exposed and taped.

c. After the resection, the duodenal stump was closed after inserting the anvil of the anastomosis instrument (arrow). The shaft of the anastomosis instrument was inserted from a jejunostomy created 20 cm distal to the jejunal stump (arrowhead).

d. End-to-end anastomosis was performed by a circular stapler (EEA25). The arrows indicate the anastomotic site.
case, the first malignancy was diagnosed as moderately to well-differentiated adenocarcinoma of the ascending colon, and the right hemicolectomy was performed 8 years previously. The second malignancy was diagnosed as moderately differentiated squamous cell carcinoma and the subtotal esophagectomy with reconstruction by a gastric tube through the retrosternal route was performed 6 years previously. Both of these two malignancies were primary tumors in the ascending colon and esophagus, respectively, as evidenced by the fact that their histological types were definitely different. The possibility that the jejunal tumors were secondary to metastasis from the ascending colon was not completely excluded. However, the period from the time of the first malignancy to the occurrence of jejunal tumors was too long (8 years), the macroscopic appearance of the jejunal tumors was more consistent with the primary tumors than with metastasized tumors, and the microscopic findings of the two jejunal tumors were different. These findings strongly support the idea that the jejunal tumors were primary tumors.

Patients with esophageal cancer are susceptible to other primary cancers, such as head and neck, gastric, colorectal, and lung cancers. The incidence of such multiplicities is reportedly between 10% and 21% according to the literature. However, multiple primary cancers involving the esophagus and jejunum are rare. To the best of our knowledge, only one report has described triple primary cancers of the esophagus, jejunum, and stomach. This might be explained by the low frequency of primary jejunal cancer. Small intestinal cancer represents approximately 0.4% of all cancers in the United States in spite of a gradual increase in its incidence. Patients with
adenocarcinoma of the small intestine have an increased risk of developing other primary tumor in the gastrointestinal tract\(^9\). In addition, the incidence of a second primary cancer, especially small intestinal cancer, is increased after colorectal cancer\(^10\).

The increased incidence of a second or third primary cancer could be explained by common environmental and/or genetic factors. In terms of environmental factors, it is obvious that both cigarette smoking and alcohol consumption are associated with an increased occurrence of esophageal cancer\(^11\). With respect to small intestinal cancer, Wu et al. reported that not cigarette smoking, but heavy alcohol consumption increased the risk of adenocarcinoma\(^12\). Several reports have described the connection between heavy alcohol consumption and the occurrence of colorectal cancers\(^13\). Indeed, the present patient was formally a heavy smoker (Brinkmann index, 720) and heavy drinker (40 g of ethanol per day for 40 years).

Patients with hereditary cancer susceptibility syndromes tend to have multiple cancers and possess germ-line mutations in key genes. For example, patients with hereditary non–polyposis colorectal cancer possess germ-line mutations in mismatch repair genes that suppress the accumulation of spontaneous mutations in the genome\(^14\). It might be assumed that patients with multiple primary cancers have genetic abnormalities in genes that play important roles in preventing carcinogenesis. Actually, all specimens from triple primary cancers showed increased expression of p53 and cyclin D1 protein in one study\(^7\). We also identified increased expression of p53 protein in two independent jejunal cancers in our patient (Fig. 3c and e), thus supporting the hypothesis of genetic abnormalities in patients with multiple primary cancers.

It is sometimes difficult to determine the most effective therapeutic strategy for patients with multiple primary cancers, whether synchronous or metachronous. Although the limitation of reconstruction organ availability sometimes makes the surgical resection hazardous and complicated, we were able to achieve curative resection for this patient after two major operations. Natsugoe et al. reported that the prognosis of esophageal cancer with other primary cancers did not differ from that without other primary cancers\(^3\). This emphasizes the importance of appropriate management of both the primary cancer as well as any second or third primary cancers that develop. For patients with double primary cancers, careful and long-term follow-up should be recommended.

References


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食道癌および結腸癌切除術後に発症し根治手術が可能であった空腸癌症例

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食道癌および結腸癌切除術後に発症し根治手術が可能であった空腸癌症例

食道癌には他癌が合併し易いことが知られているが、空腸癌を合併することは稀である。我々は異時性三重複癌の一つとして、食道癌および上行結腸癌術後に発症した空腸癌の一例を経験したので報告する。症例は63歳の男性であり、6年前に食道癌、8年前に上行結腸癌に対しても根治術を施行された。1ヶ月ほど続く嘔吐と心窩部痛を主訴に受診され、上部消化管内視鏡、上部消化管造影およびCT検査にて、トライチユム靱帯から約2cm肛門側の空腸に全周性腫瘍を認めた。手術はリンパ節郭清を伴う空腸部分切除術を施行し、術後経過は良好であり、術後10ヶ月経過した現在も再発は認めていない。根治的切除術が施行された食道癌、空腸癌および結腸癌の三重複癌の報告は初めてである。食道癌患者は他癌の合併が多くみられることより、異時性重複癌を念頭に置いた経過観察が重要である。