CASE REPORT

Small Intestinal Metastasis from Small Cell Lung Cancer

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Abstract

A 71-year-old man who had small cell lung cancer was referred to our institution. Before starting chemotherapy, anemia progressed and stool examination was positive for occult blood. An abdominal computed tomography scan with contrast medium enhancement of the gastrointestinal tract disclosed a small intestinal tumor. Histological examination after the surgery confirmed that the tumor was metastasis of lung cancer. The patient survived for 3 years after the resection. Although clinically apparent metastases of lung cancer to the small intestine are rare and are reported to have a poor prognosis, early detection and intervention might enhance the chance of survival.

Key words: small cell lung cancer, small intestine, metastasis, surgery

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Introduction

Approximately half of the patients with lung cancer have metastatic disease at the time of the initial diagnosis, and the brain, liver, adrenal glands, bones and lymph nodes are the organs most commonly involved (1, 2). Small intestinal metastases from lung cancer are rare, reportedly in 2-11% of autopsy cases (3, 4), and clinically apparent cases are even less common (4, 5). Small intestinal metastases are usually detected following the onset of a serious complication such as perforation, obstruction, or massive hemorrhage, and the prognosis of the patient is extremely poor (4). Here, we report a case of small cell lung cancer (SCLC) with small intestinal metastasis which was successfully treated.

Case Report

A 71-year-old man with a medical history of hypertension was referred to our hospital in May 2001 because of a 3-cm mass shadow in the right lower lobe of the lung (Fig. 1). He smoked 30 cigarettes daily for 48 years. The lung mass was diagnosed histologically as SCLC by bronchoscopic biopsy. Systemic examination with brain magnetic resonance imaging, chest contrast-enhanced computed tomography (CT) scan, abdominal ultrasonography and bone scan revealed metastases to the left lower lobe of the lung and in the left adrenal gland. He was admitted one month later to receive chemotherapy.

On physical examination, Karnofsky performance status was favorable showing 100, and neither anemia nor lymphadenopathy was found. The lungs and the heart sound were clear. The bowel sound was normal and no mass was palpated. However, laboratory data revealed the hemoglobin concentration to be 8.2 g/dl, which was lower than the 11.2 g/dl reported one month previously, and the stool examination for occult blood was strongly positive. Bone marrow aspiration was normal in cellularity and no cancer cells were detected in the specimen. Gastric fiberscopy and colonoscopy showed no abnormalities. An abdominal CT scan with contrast medium enhancement of the gastrointestinal tract disclosed a small intestinal tumor (Fig. 2). Surgery of the small intestinal tumor was performed in July 2001. The tumor of the small intestine was located on the oral side 60-cm from the cecum, and the ileum with mesenteric lymph nodes was partially resected. No other lesions were found in the gastrointestinal tract. The tumor was 4.5×3.0-cm in size, had a clear margin, and formed ulceration on the intraluminal side (Fig. 3). Microscopic examination revealed proliferation of a nest of small, undifferentiated cancer cells lo-
cated mainly in the submucosal layer of the wall. Histologically, the lesion was identical to the SCLC previously biopsied (Fig. 4). Microscopic examination of the mesenteric lymph revealed no cancer cells. One month after the surgery, the patient’s anemia improved to the hemoglobin level of 11.2 g/dl owing to administration of ferrous sulfate, and we administered carboplatin (at a dose calculated to produce an area-under-the-curve of 5.0 mg/ml per minute based on Calvert’s formula on day 1) and etoposide (100 mg/m² on days 1, 2, and 3) every four weeks. After four cycles of the chemotherapy, we obtained partial response in the primary and metastatic lesions. However, multiple brain metastases developed 6 months after the chemotherapy, and whole-brain irradiation was performed. He had no intention of receiving salvage chemotherapy. Twelve months after the chemotherapy, atelectasis of the right lung developed, and thoracic irradiation was performed. Twenty-one months after the chemotherapy, obstructive ileus due to a colon metastasis developed, and palliative irradiation to the metastatic lesion was performed. His symptoms gradually worsened and he died at home 3 years after the surgery; he was able to eat food until his last month. Autopsy was not performed, but no clinically apparent relapse was found in the small intes-
Discussion

Metastases of the small intestine are not uncommon in postmortem examinations (3, 4), but their clinical manifestations are reported to be rare before death (4, 5). The most common metastases to invade the small intestine are of gastrointestinal or gynecologic origin, such as those arising from the colon, uterine cervix, or ovaries (4). Small intestinal metastases from extra-abdominal malignancies have been previously reported mainly in cases of melanoma (6, 7) and lung cancer (3, 4, 8-10). Symptomatic small intestinal metastases from lung cancer have been rarely reported (4, 5). Berger et al (5) reported that only 6 of 1399 (0.5%) patients with primary lung cancer developed clinically apparent small intestinal metastases, and McNeill et al (4) reported a lower frequency (6 among 6006 hospital admissions for lung cancer). In lung cancer patients, all cell types may develop small intestinal metastases (4, 5, 11). Antler et al (11) reported that large cell and small cell carcinoma lead to gastrointestinal metastases more often than other histological types. In contrast, squamous cell carcinoma was the most frequent histological type in other reported series (4, 5).

Clinical symptoms of small intestinal metastasis vary, ranging from gastrointestinal obstruction, massive hemorrhage, to perforation due to proliferation of cancer cells (3, 5, 8); all of these are serious and require emergency surgery (10-14). We were able to diagnose the small intestinal metastasis by radiological technique before the development of severe abdominal symptoms. Early detection of small intestinal metastasis is thought to be difficult because 1) physicians have little awareness of this clinically rare metastasis, 2) non-specific symptoms may be considered as indefinite complaints or as a side effect of chemotherapy, and 3) small bowel follow-through and conventional CT scan have low sensitivity in the detection of a small intestinal tumor (15, 16). Small bowel follow-through may show a mass lesion, mucosal defect, or intussusception, but it is often unremarkable, and has a sensitivity of 33% for detection of malignant small intestinal tumors (16). In contrast, an abdominal CT scan with intravenous and oral contrast has a sensitivity of 87% for identifying the manifestations of carcinoid tumor in the small intestine (17). Recently, capsule endoscopy and double-balloon enteroscopy have been utilized as new modalities for examining the entire small intestine (18), but these are not yet widely used. From the viewpoint of wide availability and less invasiveness, we believe an abdominal CT scan with contrast medium enhancement of the gastrointestinal tract is useful for the detection of small intestinal metastasis in lung cancer patients.

It is difficult to differentiate metastatic small intestinal tumors from primary small intestinal tumors based on symptoms and imaging findings, because the major manifestations are the same as in metastatic tumors (19, 20). In our SCLC patient, pulmonary and adrenal lesions were observed on CT scan, and we could not find any English literatures of metastases to these organs from primary small intestinal tumors. Therefore, we assumed preoperatively that the small intestinal tumor of the present patient was metastasis from SCLC. Postoperative microscopic examination of the tumor revealed submucosal proliferation of cancer cells, which was histologically identical to the SCLC previously biopsied. Therefore, we confirmed the lung to be primary and the bowel, secondary.

The prognosis of lung cancer patients with small intestinal metastases is considered to be poor, because such metastases tend to occur typically in the end-stage of widely spread disease (4), tend to be multiple (8), and the detection of small intestinal metastases is difficult resulting in serious complication, for which only palliative, temporary surgery is indicated. Leidich et al reported that no patients survived more than 16 weeks after surgery (9). Berger et al reported that six out of seven patients died within 8 months after resection, and one patient survived for more than 22 months (5). We performed surgery because the anemia had rapidly progressed and there had been some reports indicating that preceding chemotherapy led to bowel perforation (10, 21, 22). As a consequence, the small intestinal metastasis was resected uneventfully, temporal partial response was achieved in all lesions after four sequential cycles of chemotherapy, and he survived 3 years receiving palliative radiation for other sites. The successful outcome of our treatment for the small intestinal metastasis may be due to single intestinal metastasis with no abdominal lymph node involvement, and the relatively good systemic state of the patient permitting the surgical intervention.

We conclude that, when progressive anemia is found and occult blood test is positive in lung cancer patients, an abdominal CT scan with contrast medium enhancement of the gastrointestinal tract is recommended to check for the possibility of metastasis to the small intestine, even though gastroduodenoscopy shows no abnormality. Early detection of small intestinal metastases, before development of serious complications, makes surgical treatment possible if the patient’s systemic condition is good, and considerably improves the prognosis.

References


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