Metastatic Anaplastic Carcinoma of the Small Intestine Arising from The Lung

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A metastatic carcinoma of the small intestine is rare. Here, the case study of an 80-year-old lung carcinoma patient, with generalized peritonitis due to neoplastic perforation of the small intestine is reported. Pathological studies of a small intestinal mass revealed a metastatic anaplastic carcinoma arising from the lung. Patients with known lung carcinoma, who develop abdominal complaints, should be examined thoroughly. Although it is very difficult to diagnose and treat a metastatic carcinoma of the small intestine, in our judgment, with a greater awareness of this neoplasm, more cases may be diagnosed in the early stages, leading to improved rates of survival. (Cancer Research and Treatment 2003;35:364-366)

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**INTRODUCTION**

Primary malignant tumors of the small intestine are uncommon, and metastatic carcinomas are rarely reported (1). The rarity of metastatic carcinomas of the small intestine suggests that metastases in the small intestine are much more aggressive than other small intestine tumors. Small intestinal perforation, secondary to a metastatic carcinoma, is an uncommon complication. Enteric metastases are poor prognosticators, occurring in the terminal stages of a widely spread disease (2).

Here, a case of a metastatic anaplastic carcinoma of the ileum, presenting as intestinal perforation, in an elderly patient with primary lung a carcinoma and a metastatic carcinoma of the jaw and left mandible is reported. The characteristic findings and diagnostic approach to primary and metastatic carcinomas of the small intestine are also discussed.

**CASE REPORT**

In November 1999, an 80-year-old lung carcinoma patient, suffering from generalized abdominal pain for 10 days, visited the emergency room. The patient had been diagnosed with a right lung carcinoma, and a bronchoscopic biopsy showed a large cell carcinoma with spindle differentiation.

The patient appeared chronically ill, with the following vital signs; pulse 88, BP 160/90, respirations 22 and temperature 37°C. On physical examination, there was generalized tenderness of the abdomen, with rebound tenderness and decreased breath sounds on auscultation of the chest. A simple abdomen X-ray revealed free air in the upper abdomen. Laboratory studies showed a white blood cell count of 8,000/mm³, hemoglobin of 10.1 g/dl, a platelet count of 227,000/mm³ and serum sodium and potassium levels of 128 and 5.4 mEq/l, respectively. The liver and renal function tests were normal.

Generalized peritonitis was suspected due to bowel perforation, so an emergency exploratory laparotomy was performed. At surgery, a perforation of the ileum, 120 cm proximal to the ileocecal valve, was found, with a 2 × 2 cm ulcerating mass near the perforation. There were also other masses 20 and 40 cm proximal to the ileocecal valve. A fourth mass, which appeared to be a hematoma, was also noted at the splenic hilum.

Approximately 17 cm of the perforated ileum was resected, and an end-to-end anastomosis performed.

A microscopic examination of the lung tumor showed the tumor cells were large, polygonal shapes, with scanty abundant cytoplasm, frequent mitoses and prominent nucleoli. A focal spindle cell component was also noted (Fig. 1A, B). The tumor cells from the small intestine appeared microscopically similar, but with more abundant cytoplasm (Fig. 2A, B).

The patient expired 2 days postoperatively due to pulmonary complications.

**DISCUSSION**

Although the small intestine constitutes 70 to 80% of the total length of the gastrointestinal tract, neoplasms of the small intestine are rare. Only 3 to 6% of gastrointestinal tumors and 1% of gastrointestinal malignancies arise from the small in-
Most malignancies of the small intestine are diagnosed after the seventh decade. In order of reported frequency, the most common types are adenocarcinomas (40 to 50%), carcinoid tumors (30%), lymphomas (14%) and sarcomas (11%) (3). Most of these malignancies arise in the ileum (almost 50%), with the remainder divided equally between the duodenum (25%) and jejunum (25%) (4).

An upper gastrointestinal tract series, with a small intestinal follow-through, is the single most useful diagnostic test, and yields an accurate diagnosis in 50 to 70% of patients with malignant neoplasms of the small intestine (5).

Despite the rarity of small intestinal malignancies, the small bowel is frequently involved in metastatic disease. These lesions may produce symptoms of obstruction, and cause bleeding, anorexia, weight loss, anemia and pain (6).

The most common primary tumors that metastasize to the small intestine are those arising in other intra-abdominal organs. The uterine cervix, ovary, kidney, stomach and colon are the most common primary sites. Small-intestinal involvement is either by direct extension, or implantation, of shed cells. Metastases from extra-abdominal tumors to the small intestine are rare. A cutaneous melanoma is the most common extra-abdominal source; 60% of patients have metastatic deposits that have disseminated to the gut (7). Other extra-abdominal sources are adenocarcinomas of the breast and carcinomas of the lung.

When gastrointestinal metastases become clinically significant, patients can develop acute symptoms of intestinal obstruction or perforation. Such acute intra-abdominal conditions, requiring surgery, have a very poor prognosis. DeCastro reviewed 25 metastatic carcinoma cases, with single or multiple metastases to the small bowel, which had been treated at the Mayo Clinic. He also found 26 similar cases in the literature. The cervix, kidney and skin were the most frequent sites of the primary tumor, and obstruction was the most common manifestation. Conversely, small bowel metastases from a primary carcinoma of the lung may present with intestinal perforation, which may result from necrosis of the tumor due to chemotherapy (8).

Perforation of the small bowel, secondary to a metastatic

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**Fig. 1.** (A) The lung. The tumor cells are large, polygonal shapes, with scanty abundant cytoplasm, frequent mitoses and prominent nucleoli. A focal spindle cell component is also noted. (B) The lung. Immunohistochemical staining for cytokeratin shows a strong positive reaction (>200).

**Fig. 2.** (A) The small intestine. The tumor cells appeared similar microscopically, with more abundant cytoplasm. (B) The small intestine. Immunohistochemical staining for cytokeratin shows a strong positive reaction (>200).
lung carcinoma, is extremely rare, although the incidences of such perforation are increasing (9).

Small bowel metastases may occur in every type of primary lung carcinoma. Nevertheless, Antler et al. reported that undifferentiated large cell and small cell carcinomas lead to gastrointestinal tract metastases more often than other histological types (10). In contrast, McNeill et al. found that a squamous cell carcinoma was the most frequent histological type (11). Small bowel metastases from primary carcinomas of the lung are reported to occur late in the course of the disease. The average small-intestinal metastasis appears 5 years after primary tumor diagnosis. The tumor in our patient was much more aggressive.

A patient may not be diagnosed with a lung carcinoma at the time of the intestinal perforation. Therefore, the surgeon must consider the possibility of an intestinal perforation on the basis of a differential diagnosis, especially when evaluating patients with symptoms and signs suggestive of a lung carcinoma, since more than 10% of patients with lung carcinomas have occult or apparent small bowel metastases. The abdominal presentation is that of an acute abdomen and free air, which should be demonstrated radiographically.

The treatment of a perforated small bowel is the same as for any acute abdomen; the procedure of choice is resection of the involved region of the small intestine, with a primary enterostomy (12), but the prognosis is extremely poor (13,14).

Although it is very difficult to diagnose and treat a metastatic carcinoma of the small intestine, in our judgment, with a greater awareness of this neoplasm, more cases may be diagnosed in the early stages, leading to improved rates of survival.

REFERENCES