Metastasis-induced Acute Pancreatitis as the Initial Manifestation of Bronchogenic Carcinoma*

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Metastasis-induced acute pancreatitis (MIAP) is a very rare initial manifestation of lung cancer. A review of one institution’s experience and the English language medical literature was conducted to define the incidence, natural history, and optimal treatment of this unusual clinical problem. One of 802 (0.12 percent) lung cancer patients presented with MIAP. Seven additional cases were found in the literature. Small-cell carcinoma was present in six of eight patients. Prognosis is poor. Four patients died within two weeks of hospital admission. In patients with small-cell carcinoma and mild pancreatitis, chemotherapy may favorably influence recovery from pancreatitis. Those with severe pancreatitis tolerate chemotherapy poorly and initial supportive management is advisable. Patients with small-cell histologic features who recover from pancreatitis should receive chemotherapy. Survival beyond six months is possible.

Pancreatitis metastases are relatively common in advanced bronchogenic carcinoma, but metastasis-induced acute pancreatitis (MIAP) is unusual.1,2 Acute pancreatitis is rarely the initial manifestation of lung cancer. Because this clinical scenario is sufficiently different from MIAP developing after diagnosis and treatment of lung cancer, separate consideration and analysis are warranted. Few data are available concerning incidence, prognosis, and treatment. To gain a better understanding of this rare clinical problem, we undertook a review of our institution’s experience and a collective review of cases reported in the medical literature.

METHODS AND MATERIALS

Records of patients with a diagnosis of acute pancreatitis or bronchogenic carcinoma at the Misericordia Hospital over a ten-year period were retrospectively reviewed. Patients diagnosed as having both conditions, either synchronously or with pancreatitis preceding lung cancer, were identified. Patients were excluded if pancreatitis developed after a diagnosis of bronchogenic carcinoma had been established.

The English language medical literature was searched by Medline and by manual methods to identify reports of bronchogenic carcinoma with acute pancreatitis as the initial manifestation. The terms pancreatitis and lung neoplasms were used. Most retrieved reports were excluded because pancreatitis was seldom the initial manifestation of lung cancer.

RESULTS

Over a ten-year period, 802 patients with bronchogenic carcinoma and 614 patients with acute pancreatitis were treated at the Misericordia Hospital in Edmonton, Canada. Four patients initially diagnosed as having acute pancreatitis were subsequently found to have a bronchogenic carcinoma (0.5 percent of lung cancer patients). Three of these patients were excluded from consideration. One patient, with a long history of alcohol abuse, suffered from acute pancreatitis ten months prior to the diagnosis of small-cell lung cancer. The two conditions were undoubtedly unrelated. The second patient died of small-cell carcinoma of the lung one month after being hospitalized with acute pancreatitis. Although pancreatitis may have been secondary to pancreatitis metastases, gallstones were present and alcohol abuse was suspected. Computed tomography may have clarified the etiology, but it was not required for patient treatment and was not obtained. The third excluded patient was admitted to the hospital with abdominal pain and a serum amylase level over 1,000 U/L. Chest radiography showed a right lower lobe mass and bronchoscopy was positive for small-cell carcinoma. Multiple visceral metastases, including pancreatic metastases, were suspected. The patient decided against extensive investigations, such as abdominal computed tomography, and declined chemotherapy treatment. He died at home 11 days after hospital admission. Amylase isoenzyme assay was positive for salivary amylase, a finding indicative of ectopic amylase secretion. The clinical diagnosis of pancreatitis was probably erroneous and this patient was excluded. The one patient with strong evidence of MIAP as the initial manifestation of bronchogenic carcinoma represents 0.12 percent of lung cancer patients and 0.16 percent of patients with acute pancreatitis in this series.

Collective Review

Seven reports of acute pancreatitis as the initial
manifestation of bronchogenic carcinoma were found in the English language medical literature (Table 1).\(^3\)\(^-\)\(^9\)

Five of seven tumors were small-cell carcinomas. Mean age was 57 years. Survival ranged from 8 days to 8 weeks with a mean survival of approximately four weeks from onset of pancreatitis. Four patients died within 2 weeks of hospital admission. Two patients who received chemotherapy died within 6 weeks.

**CASE REPORT**

A 44-year-old woman was admitted to the hospital with acute abdominal pain and a serum amylase level over 1,000 U/L. Abdominal computed tomography demonstrated a pancreatic mass (Fig 1). Carcinoma of the pancreas was suspected. Endoscopic retrograde pancreatocholedangiography showed obstruction of the pancreatic duct. Bone metastases were present on radioisotope bone scanning. Acute pancreatitis resolved with supportive treatment. Chest radiography showed opacification of the left lower lobe (Fig 2). Because the radiographic appearance did not improve with antibiotic treatment, bronchoscopy was indicated. Bronchoscopy was positive for an obstructing small-cell carcinoma of the left lower lobe. Endoscopic findings were typical of bronchogenic carcinoma as opposed to pulmonary metastases. She responded partially to three courses of cisplatin and etoposide. Malignant bile duct obstruction required palliative percutaneous transhepatic biliary drainage. She remains alive, but with advanced disease, 6 months after her initial presentation with pancreatitis.

**DISCUSSION**

Pancreatic metastases are found in approximately 10 percent of lung cancer patients at postmortem examination.\(^1\) Metastasis-induced acute pancreatitis is unusual and typically occurs in patients known to have

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**Table 1—MIAP as the Initial Manifestation of Lung Cancer**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Age, yr/ Sex</th>
<th>Histology</th>
<th>Chest Radiograph</th>
<th>Treatment</th>
<th>Survival</th>
<th>Postmortem</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>55/M</td>
<td>Adenocarcinoma</td>
<td>LUL mass</td>
<td>Supportive</td>
<td>13 d</td>
<td>Pancreatic mets, pseudocyst</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>59/F</td>
<td>Bronchogenic</td>
<td>Lt hilar adenopathy</td>
<td>Supportive</td>
<td>8 wk</td>
<td>Pancreatic mets, acute pancreatitis</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>58/M</td>
<td>Small cell</td>
<td>RML collapse</td>
<td>Bt pleural effusion</td>
<td>Chemotherapy</td>
<td>5-6 wk</td>
<td>Pancreatic mets</td>
</tr>
<tr>
<td>6</td>
<td>67/M</td>
<td>Small cell</td>
<td>LUL mass</td>
<td>Supportive</td>
<td>12 d</td>
<td>Pancreatic mets, acute pancreatitis</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>58/M</td>
<td>Small cell</td>
<td>Mediastinal mass</td>
<td>Supportive</td>
<td>7 wk</td>
<td>Not done</td>
<td>Pancreatic mass (US)</td>
</tr>
<tr>
<td>8</td>
<td>45/F</td>
<td>Small cell</td>
<td>RML, RLL collapse</td>
<td>Mediastinal mass</td>
<td>Supportive</td>
<td>8 d</td>
<td>Pancreatic mets, necrotizing pancreatitis</td>
</tr>
<tr>
<td>9</td>
<td>55/F</td>
<td>Small cell</td>
<td>LUL collapse</td>
<td>Lt pleural effusion</td>
<td>Chemotherapy</td>
<td>2 wk</td>
<td>Not done</td>
</tr>
<tr>
<td>Present case</td>
<td>44/F</td>
<td>Small cell</td>
<td>LLL consolidation</td>
<td>Chemotherapy</td>
<td>Alive after 6 mo</td>
<td>Not applicable</td>
<td>Malignant biliary obstruction</td>
</tr>
</tbody>
</table>

*MIAP = metastasis-induced acute pancreatitis; LUL = left upper lobe; LLL = left lower lobe; RML = right middle lobe; RLL = right lower lobe; Lt = left; Rt = right; M = male; F = female; mets = metastases; US = ultrasound; CT = computed tomography.

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**Figure 1.** Computed tomographic scan showing a pancreatic mass.

**Figure 2.** Chest radiograph showing a left lower lobe mass.
advanced bronchogenic carcinoma. MIAP as the presenting manifestation of lung cancer is very rare. It occurred in only 1 of 802 lung cancer patients in this series (0.12 percent). Although rare, MIAP should be considered in cases of idiopathic acute pancreatitis.

Seventy-five percent (6/8) of lung cancer patients presenting with MIAP have small-cell tumors. Small-cell carcinomas are known to metastasize to the pancreas with a higher frequency than other lung cancers. Survival is often measured in days or weeks. Early death may result from acute pancreatitis or from widespread metastatic disease.

Given the rarity of this clinical problem and its dismal prognosis, it is difficult to make firm treatment recommendations (Fig 3). Treatment of MIAP is initially supportive, but failures of conservative management are common. Aggressive chemotherapy has been advocated to hasten resolution of acute pancreatitis in those with small-cell carcinoma. Chemotherapy is poorly tolerated by patients with severe pancreatitis and it is therefore advisable in patients with high Ranson scores. Common causes of pancreatitis, such as biliary lithiasis and alcohol abuse, should be excluded before commencing chemotherapy.

Standard treatment approaches to metastatic lung cancer are indicated in patients who recover from acute pancreatitis (Fig 3). Those with small-cell carcinoma should receive chemotherapy. Our patient’s prolonged survival after chemotherapy supports this approach. There is little to offer patients with non-small-cell carcinoma.

REFERENCES