Case Report

Dual Synchronous Metastases to Pancreas and the Breast from a Small Cell Lung Cancer: A Case Report

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Abstract

Background: Small cell lung carcinoma (SCLC) is an aggressive subtype of lung tumors with a high rate of metastasis. It usually starts in the lung but can also infiltrate several sites such as the regional lymph nodes, liver, bone, adrenal glands and brain. Since SCLC is often quiescent, the diagnosis is often confirmed by the investigations related to its extra-thoracic manifestations. Several cases reported in literature have isolated other extra-thoracic sites than the aforementioned ones: pancreatic and breast metastatic sites were identified in distinct cases. No previous case report has identified the presence of breast and pancreas metastases simultaneously.

Case Presentation: A 64-year-old woman, heavy smoker and alcoholic, presented to the emergency department for acute severe epigastric pain. The abdominal CT scan showed two necrotic masses in the pancreas. Swelling in the right breast and tender subcutaneous nodules were identified on the clinical examination of the neck and the scapula. The mediastinal lymph node enlargement was confirmed through a chest CT scan from which a necrotic lesion of the left lung was identified suggestive of SCLC. A suspicious mass was spotted through a mammogram from which an echo-guided sampling of the breast mass led to the same neoplastic origin. Appropriate treatment was given.

Conclusions: This is the first case that identified simultaneous metastases in the breast and pancreas from a primary small cell lung cancer. Despite the inability to confirm the nature pancreatic masses, their synchronous presence in the head and tail is part of extra-thoracic manifestations of SCLC.

Keywords: pancreatic metastasis, breast metastasis, lung cancer, synchronous metastasis, dual metastasis, small cell lung carcinoma

Background

Small cell lung carcinoma (SCLC) represents 15 to 18% of all lung cancers worldwide [1], and it is considered the most aggressive subtype of lung tumors characterized by a rapid progression and early widespread metastasis [2]. It usually begins in the lung and readily infiltrates locally and distantly at several sites. The most frequently involved extra-thoracic sites are the regional lymph nodes, liver, bone, adrenal glands and brain [3-6].
Whether the tumor is local or metastatic, its histological appearance on light microscopy and hematoxylin and eosin stain shows cells that have a small size, a round-to-fusiform shape, scant cytoplasm and finely granular nuclear chromatin. Immunohistochemistry reveals positive staining of the neuroendocrine markers, mostly CD56 (membranous pattern), chromogranin (cytoplasmic staining) and synaptophysin [7].

Since SCLC could be quiescent by itself, it is often diagnosed by investigations (imaging, particularly CT scan) related to its extra-thoracic manifestations. Several cases reported in the literature have isolated different unusual extra-thoracic metastatic sites than the aforementioned ones, such as the pancreas or the breast [8,9]. In fact, one paper reported the diagnosis of SCLC based on the isolation of breast and cutaneous infiltration by tumor cells [8].

No previous case report has identified the presence of breast and pancreas metastases simultaneously. The following case describes dual pancreatic and breast metastases revealing an undiagnosed SCLC.

Case Presentation

A 64-year-old woman, heavy smoker (100 pack-year) and alcoholic, presented to the emergency department for acute severe epigastric pain radiating to the back, suggestive of pancreatitis. The abdominal CT scan showed two necrotic masses in the pancreas, the first (5 cm) localized in the head and the second (3 cm) localized in the tail englobing the superior mesenteric artery (Figure 1). Blood tests were undergone and showed an elevated lipase level at 2112 U/L. Clinical examination showed a newly growing tender subcutaneous right scapular nodule, a right node at the neck, and a swelling in her right breast.

Figure 1: Abdominal CT scan with IV contrast media showing poorly limited mass (red circles) to the head (A) and tail (B) of the pancreas.
A chest CT scan revealed enlarged mediastinal lymph nodes reaching 42 mm, along with necrotic supraclavicular bilateral lymph nodes measuring 30 mm, and a necrotic heterogeneous lesion of the left lung at the upper lobe measuring 21 mm.

Breast mammogram using the Hologic system was done, showing a mass in the upper inner quadrant with microlobulated contour. Directed sonography revealed a suspicious heterogeneous hypoechogenic mass measuring $9 \times 5$ mm at the right upper inner quadrant BIRADS 4 category according to the American College of Radiology (Figures 2 and 3).

**Figure 2:** Right breast mammogram: cranio-caudal and medio-lateral oblique views showing a clip at the center of the suspicious lesion at the right upper inner quadrant (red circle)

**Figure 3:** Breast ultrasonography showing a suspicious heterogeneous hypoechogenic mass at the upper inner quadrant of the right breast.
An excision of both the right scapular nodule and the right cervical node showed infiltration with small malignant cells staining positively for chromogranin A, synaptophysin and cytokeratin AE1/AE3 compatible with a metastasis of a small cell neuroendocrine carcinoma. Moreover, an echo-guided sampling of the right breast mass concluded to the same small cell neuroendocrine carcinoma origin.

Chemotherapy was initiated based on cisplatin and VP16, and remission of abdominal pain was obtained on the third day following appropriate treatment.

**Discussion and Conclusions**

This is the first reported case that identified synchronous metastases in the breast and pancreas from a primary small cell lung cancer. Pancreatic metastasis is a rare entity in SCLC. The reported incidence of small cell lung cancer metastases to the pancreas in autopsy studies is ranging between 1.6-10.6% [10]. Moreover, the most frequent histological type of lung cancer associated with pancreatic metastasis is small cell lung carcinoma [10]. In our case, despite that direct histologic confirmation of the pancreatic metastasis could not be ensured, these two masses found in the head and tail must be part of the extra-thoracic metastases from the primary lung malignancy. The rapid subsequent pain relief represents an indirect argument in favor of their metastatic nature.

Furthermore, it could have been suggested that the additional breast mass identified was an associated primary malignancy which is a frequent presentation in a 64-year-old woman. However, breast metastasis was confirmed by the positive immune-staining of the extracted specimen to the neuroendocrine markers (chromogranin and synaptophysin). The reported incidence in literature of breast metastasis from extramammary origin is accounted for up to 2% [11].

Although several cases have reported breast metastasis from SCLC, this is the first case in which SCLC was diagnosed following an identification of a dual synchronous breast and pancreatic metastasis.

This case also offers a didactic lesson to our daily practice, by stressing, prior to treatment planification, on the appropriate assessment of clinical, radiological and immunohistochemical disease characteristics.

**References**