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CASE REPORT

Obstructive jaundice in small cell lung carcinoma

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Abstract

Small cell lung carcinoma (SCLC) commonly metastasizes to distant organs. However, metastasis to the pancreas is not a common event. Moreover, obstructive jaundice as a first clinical presentation of SCLC is extremely unusual. This case reports a 51-year-old male with SCLC, manifesting with obstructive jaundice as the initial clinical presentation. Endoscopic retrograde cholangiopancreatograghy (ERCP) and abdominal computed tomography (CT) scan showed a mass at the head of the pancreas. The patient underwent pancreatoduodenectomy (Whipple procedure). Histopathology revealed a chromogranin-A-positive poorly-differentiated neuroendocrine carcinoma of the pancreas. No imaging study of the lung was performed before surgery. A few months later, a follow-up CT revealed unilateral lung nodules with ipsilateral hilar nodes. A lung biopsy was done and histopathology reported a TTF-1-positive, chromogranin A-positive, small cell carcinoma of the lung. On review, the pancreatic tumour was also TTF-1-positive. He was then treated with combination chemotherapy (cisplatin, etoposide). These findings highlight that presentation of a mass at the head of pancreas could be a manifestation of a metastatic tumour from elsewhere such as the lung, and thorough investigations should be performed before metastases can be ruled out.

Keywords: small cell carcinoma, lung, obstructive jaundice, metastasis, pancreas

INTRODUCTION

Lung cancer is the most common cause of cancer-related mortality all over the world. Small cell lung carcinoma (SCLC) accounts for approximately 8-10% and 10-13% of all new cases among males and females, respectively.[1] Less than 5% of patients with SCLC are asymptomatic at diagnosis. Common presenting symptoms of the disease include shortness of breath, cough, bone pain, weight loss, fatigue and neurologic dysfunction.

The disease typically presents 8-12 weeks before diagnosis. The symptoms of SCLC can result from local tumour growth, intrathoracic or distant spread and paraneoplastic syndromes.

The route of metastasis is lymphatics (28%), vascular (27%), lymphovascular (19%) or through direct invasion (18%). Common sites of haematogenous metastases include brain, bones, liver, adrenal glands and bone marrow. The symptoms depend upon the site of spread. Neurological dysfunction can occur due to brain metastases or spinal cord compression. Other symptoms from distant metastasis may include pain from bone metastasis, as well as jaundice or abdominal pain due to liver metastasis.

SCLC rarely metastasizes to the pancreas and the extrahepatic bile ducts. Metastatic tumours to the pancreas, excluding direct invasion from close organs, are uncommon and accounts for less than 2% of all pancreatic malignancies. In general, metastatic tumours to the pancreas are commonly from breast, lung, colon, kidney and skin (melanoma).[2] From surgical and autopsy data, Adsey *et al* found that 42% of pancreatic metastases arose from the lung. This is supported by a study conducted by Bening *et al*.[3] However, in a different study, metastases to the pancreas were found in only 26 (3.1%) of 850 lung cancer patients.[4]

Our patient manifested with obstructive jaundice due to tumour at the head of pancreas, with no symptoms related to SCLC initially.

CASE REPORT

A 51-year-old man was referred to a private Medical Centre with jaundice. The patient had worked as a spray painter in a car workshop for

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30 years. He had no known history of medical illness or respiratory symptoms. He was a heavy smoker, smoking 30 cigarettes per day. He was primarily diagnosed with obstructive jaundice and abdominal computed tomography (CT) scan and endoscopic retrograde cholangiopancreatography (ERCP) performed revealed a mass at the head of pancreas causing extrahepatic bile duct obstruction. However, no CT scan or x-ray of the chest was done at that time. The patient underwent pancreatoduodenectomy (Whipple procedure) and histopathology examination of the excised specimen showed a poorly differentiated neuroendocrine carcinoma of the pancreas (Figure 1. A & B).

Microscopically, the pancreatic tumour showed infiltration by sheets of tumour cells demonstrating round to oval hyperchromatic nuclei, inconspicuous nucleoli and indistinct cytoplasmic borders (Figure 1.A). Mitosis was frequently seen (>50/50hpf). Immunohistochemical studies revealed that the tumour cells were positive for chromogranin-A, neuron-specific enolase (NSE), CD56 and Ki-67 (60%) and were negative for synaptophysin, CK7, CK20 and vimentin.

During the course of follow-up, a chest CT scan was performed to rule out the presence of lung metastasis. CT scan showed an enhancing lung lesion with satellite nodules on the right side and ipsilateral hilar and mediastinal nodes (Figure 2.A). The patient underwent CT-guided lung biopsy of the right upper lobe lesion, which revealed a small cell carcinoma (Figure 1.C). CT scan also showed evidence of brain metastases (Figure 2.B). Thereafter, a combination therapy with cisplatin and etoposide was prescribed for the patient.

Histopathological examination of the lung biopsy showed infiltration by sheets of pleomorphic tumour cells displaying round to oval, hyperchromatic nuclei, inconspicuous nucleoli

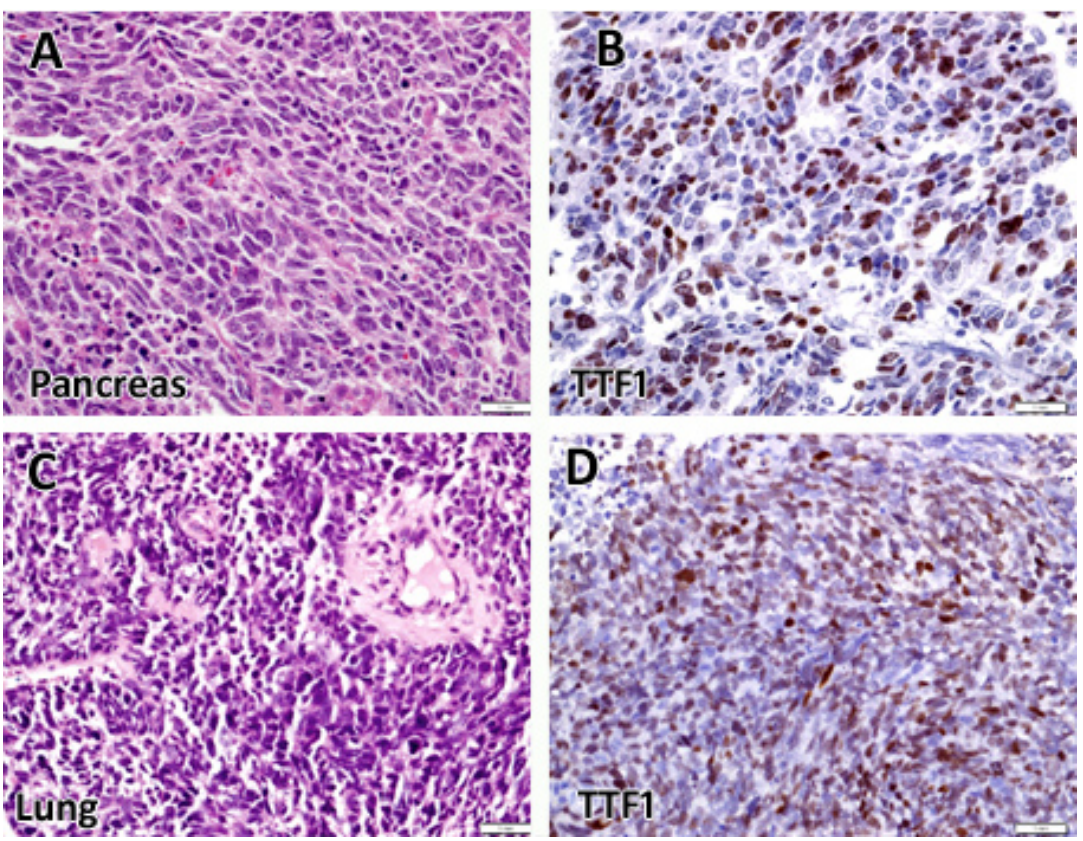

FIG. 1: (A) Hematoxylin and eosin section of pancreatic tumour shows poorly differentiated neuroendocrine carcinoma (x400). (B) Pancreatic tumour cells show positivity to TTF-1 (x400). (C) Histology of the lung shows small cell carcinoma demonstrating sheets of pleomorphic tumour cells displaying round to oval and hyperchromatic nuclei, inconspicuous nucleoli and indistinct cytoplasmic borders (x400). (D) Tumour cells of the lung show positivity to TTF-1 (X400).

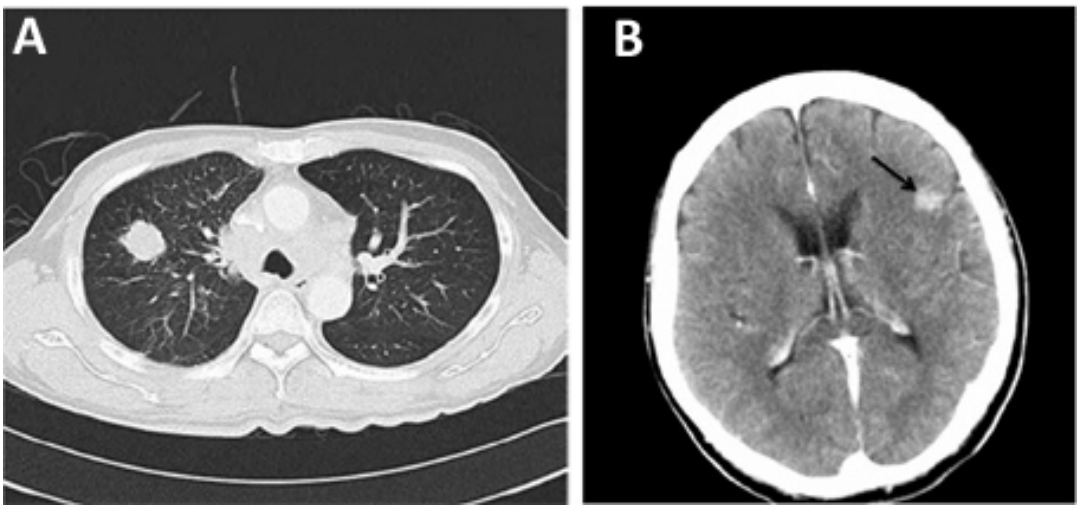

FIG. 2: (A) Chest CT scan shows an enhancing lesion with satellite nodules on one side and ipsilateral hilar and mediastinal nodes. (B) Brain CT scan shows evidence of brain metastasis *(arrow).*

and indistinct cytoplasmic borders (Figure 1.C)., similar to that seen in the pancreas. Mitosis was frequently seen. Immunohistochemical studies revealed positivity for chromogranin-A, neuron-specific enolase (NSE), CD56 and Ki-67 (70%). The cells were negative for synaptophysin, CK7, CK20 and vimentin. Immunohistochemical staining for thyroid transcription factor-1 (TTF-1) was positive on both the pancreatic and lung tumours (Figures 1.B and 1.D). In view of TTF-1 positivity and the presence of brain metastasis which is very common (50-80%) in SCLC and unilateral lung lesions, the lung tumour was regarded as the primary lesion metastasizing to the pancreas.

DISCUSSION

Small cell lung cancer (SCLC) accounts for 20-25% of all bronchogenic carcinomas and is associated with the poorest 5-year survival of all histological types.[5] Most patients have hilar nodal metastases, frequently massive, and two-thirds of patients present with distant metastases, the usual sites being brain, liver, adrenal gland, bone and bone marrow.[6]

Although metastatic tumour of the pancreas is an unusual finding, it has been reported that lung cancer may metastasise to the pancreas. The most frequent cytological subtype is small cell carcinoma with a pancreatic metastasis incidence of 10%, followed by adenocarcinoma (2.4%), large cell carcinoma (1.9%) and squamous cell carcinoma (1.1%).[7] Other primary origins of metastases to pancreas include the breast, colon, kidney and skin (melanoma).[2]

Morphologically, there is no difference between SCLC and extra-pulmonary small cell carcinomas. Therefore, ancillary studies play an important role for determining the primary origin of the tumours.

Immunohistochemically, Islet 1 (ISL1) has been proven to be a sensitive and specific marker for neuroendocrine tumours of the pancreas and their metastases.[8] In addition, diffuse reactivity for 34BE12 (CK903) has been suggested as an exclusion criteria for high-grade neuroendocrine carcinomas at different sites. The presence of rare 34BE12-positive cells or focal dot-like reactivity may be seen in a subset of SCLCs and does not exclude this diagnosis.[7] On the other hand, 44 to 80% of extra-pulmonary SCLCs are also positive for TTF-1.[9] Hence, it is not useful as a sole criterion to determine the lung origin of small cell carcinomas. In summary, our case illustrates that SCLC may present with obstructive jaundice as a result of pancreatic metastasis. Detailed radiological studies as well as utilisation of ancillary techniques in pathological examination were essential to help us achieve an accurate diagnosis.

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