Case Report

Bronchogenic carcinoma presenting as solitary sternal metastasis

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ABSTRACT

Bone metastasis in bronchogenic carcinoma usually occurs at axial skeleton-like vertebrae, ribs, etc., Here we report a case of a 60-year-old male presenting to us with a sternal swelling. Fine-needle aspiration cytology of the swelling showed features suggestive of metastatic adenocarcinoma. Contrast-enhanced computed tomography (CECT) of thorax showed a mass in the left lung hilar area measuring 3 × 4 cm along with sternal metastasis. CT-guided trucut biopsy of the lung mass suggested diagnosis of adenocarcinoma of lung. Immunohistochemistry of a histopathological section from the lung mass confirmed the diagnosis of adenocarcinoma of lung. To conclude, it was a case of adenocarcinoma of lung presenting as solitary sternal metastasis. We want to report the case as solitary sternal metastasis without involvement of other bones is rare as a presenting feature of underlying malignancy. To the best of our knowledge, sternal metastasis as a presentation of bronchogenic carcinoma is not reported in the literature.

Key words: Adenocarcinoma, bronchogenic carcinoma, sternal metastasis

INTRODUCTION

Bronchogenic carcinoma is the most common cause of cancer-related mortality in males and accounts for 12% of all newly diagnosed cancer.[1] Despite advances in diagnostic procedures, unfortunately, in most cases it is diagnosed at a later stage presenting as metastasis. Bone metastasis, which is a common presenting feature of bronchogenic carcinoma, usually occurs at axial skeleton-like vertebrae, ribs, etc., No report has been published so far describing sternal metastasis as a presenting feature of lung cancer. Here we report a case of solitary sternal metastasis as the initial and only presenting feature of bronchogenic carcinoma in a 60-year-old male.

CASE REPORT

A 60-year-old male presented to us complaining of sternal pain for the last three months. The pain was persistent, progressive, localised, and severe enough to disturb sleep. On enquiry, the patient complained of cough for 3 months and shortness of breath for 2 months. There was no history of haemoptysis, fever, hoarseness of voice, or weight loss. On inspection, there was a swelling arising from sternal area measuring 2.5 × 2.0 cm in the region of the sternal angle. A general examination of the patient did not reveal any significant abnormalities. Routine examination of blood, urine, and liver function test was within normal limits. The sternal swelling was tender, firm, and with increased vascularity. No cervical or generalised lymhadenopathy was present. Abdomen was soft, with no organomegaly. Examination of the respiratory system did not reveal any pleural effusion or gross mass lesion. Examination of other systems was within normal limits. Chest X-ray lateral view showed a soft tissue swelling arising from the sternum. Chest X-ray postero-anterior view showed a homogenous opacity arising from hilum, with an outward radiating margin [Figure 1a]. A blind fine-needle aspiration cytology (FNAC) of the sternal mass was done, which revealed atypical cells loosely cohesive, with hyper-chromatic nuclei, nuclear pleomorphism, scanty-to-moderate cytoplasm, and ill-defined cytoplasmic border, features consistent with adenocarcinoma (x5 × x10) [Figure 2a]. As the patient was an elderly male, smoker, and sternal fine-needle aspiration cytology revealed adenocarcinoma, a suspicion was formed to search for primary in the lung. Contrast-enhanced

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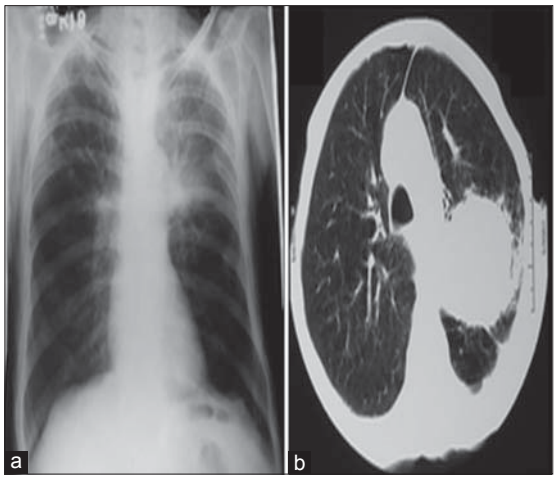

Figure 1: (a) Chest X-ray postero-anterior view showing a homogenous opacity arising from the hilum with an outward radiating margin. (b) CECT thorax showing a mass in the left lung hilar area measuring 3 × 4 cm

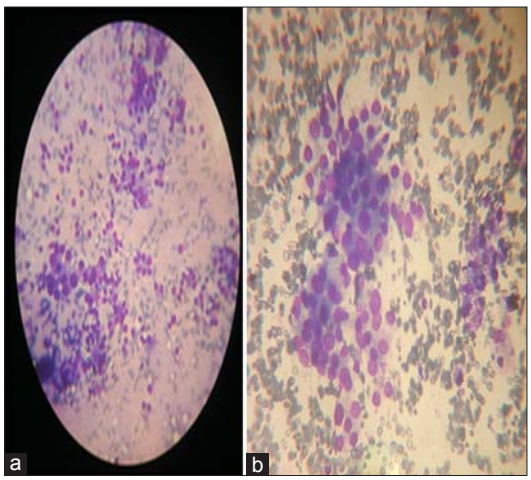

Figure 2: (a) Fine-needle aspiration cytology of the sternal swelling suggestive of adenocarcinoma (x5 × x10). (b) CT-guided trucut biopsy of the lung mass showing features suggestive of adenocarcinoma (x5 × x40)

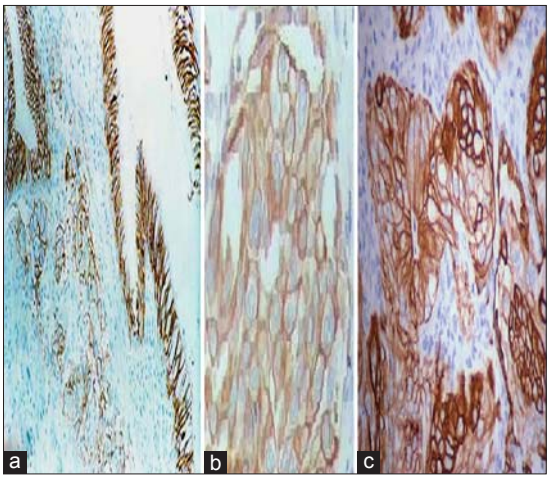

Figure 3: Immunohistochemical staining of lung biopsy specimen showing positive staining for (a) epithelial membrane antigen, (b) cytokeratin-8, and (c) cytokeratin-7

computed tomography (CECT) of the thorax was advised, which showed a mass in the left lung hilar area measuring 3 × 4 cm along with sternal metastasis [Figure 1b]. No pleural effusion or mediastinal lymphadenopathy was present. CECT abdomen was essentially normal. CT-guided trucut biopsy from the lung mass revealed a highly cellular smear of atypical epithelial cells with mild-to-moderate pleomorphism and hyper-chromatic nuclei in clusters and papillae suggestive of adenocarcinoma (x5 × x40) [Figure 2b]. Fiber-optic bronchoscopy revealed a proliferative growth in the left main bronchus >2 cm away from the carina. Bronchial biopsy revealed features consistent with adenocarcinoma of lung. The tumour cells stained positive for epithelial membrane antigen, pancytokeratin, thyroid transcription factor-1, and cytokeratins 8 and 7 [Figure 3a-c]. Test for epidermal growth factor receptor mutation and amplification was negative. Isochrome 12p was not detected. These findings confirmed a primary lung adenocarcinoma. Bone scan was normal except increased uptake in the sternum. Metastasis to other bones could be ruled out from the bone scan report. To conclude, it was a case of adenocarcinoma of lung presenting as solitary sternal metastasis.

DISCUSSION

Primary bone tumour of the sternum is very rare (0.6%), which includes chest wall sarcoma, chondroma, Ewing's sarcoma, etc., There are several types of sternal masses: Primary tumours (1%) (chondrosarcoma, osteogenic sarcoma, Ewing's sarcoma), metastatic tumours (60-70%)(breast, lung, kidney, thyroid), direct invasion (5-10%)(lymphoma, bronchogenic carcinoma), and benign tumours (2-3%) (osteomyelitis, sternal fractures with hyperostosis, eosinophilic granuloma).[2] Metastasis in the sternum derives from malignancy in breast, kidney, haematological malignancy, lung, and prostate. In these cases sternal metastasis is associated with other bone and organ metastasis. Isolated sternal metastasis from renal cell carcinoma, hepatocellular carcinoma, and breast carcinoma has been reported in the literature. But, to the best of our knowledge, no case of isolated sternal metastasis from bronchogenic carcinoma is available in the literature. The cardinal features of bronchogenic carcinoma include cough, haemoptysis, chest pain, and breathlessness. Only a small percentage of patients may present with metastasis to axial bones (ex-vertebrae, rib). But isolated sternal metastasis as the only presenting feature of lung malignancy is not known. Toussiret *et al.*,[3] in their review of 10 cases of sternal deposit as the initial presenting feature of malignancy, reported eight as been owing due to haematological malignancy and one due to renal cell carcinoma, and one of bronchial origin. Although sternal metastasis is a rare cause of sternal pain, it must not be overlooked. A thorough search for the primary is should be done using different investigation techniques.[4]

Examination of breasts also has to be kept in mind during search for primary. Unfortunately, there were a few case reports where, even af ter extensive search, no primary was detected in patients presenting with a solitary sternal deposit. However, suspicion formed in a clinical setting and thorough investigation will help search for primary in many cases. Sometimes these tumours may display an iceberg effect, with an internal component bigger than the external one.[5] A solitary sternal deposit may be treated by local resection or local radiotherapy along with analgesics to combat pain. In the analysis of survival data of malignant sternal tumours, two major considerations merit attention. First, removal of a large, fungating, painful, bleeding mass may improve quality of life, although it may not prolong life span. Second, some patients in whom symptoms are due to direct compression of the underlying lung or invasion of neuromuscular bundles will show marked improvement of symptoms with surgical resection of sternal mass. In either case treatment outcome is not judged by prolongation of life span, but by improved quality of life.[6,7] To conclude, we want to report the case as solitary sternal metastasis as a presentation of underlying malignancy without involvement of other bones, which is rare. Moreover, sternal metastasis as a presentation of bronchogenic carcinoma is not reported in the literature.

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