A rare case of scapular metastasis from bronchogenic carcinoma with ipsilateral malignant pleural effusion

Sir,

A large number of the patients with lung cancer present with symptoms due to metastases caused by hematogenous dissemination or lymphatic spread of tumor cells to the distant sites, and the prognosis is poor in these patients. Approximately one third of patients of lung cancer present with symptoms due to metastases outside the thorax.[1] Lungs, liver, bones, lymph nodes, pleura, pericardium, adrenal glands, brain, and skin are common sites for metastases of bronchogenic carcinoma.[1] Lung cancer can metastasize to any bone, but the axial skeleton and proximal long bones are most commonly affected.[2] Among the axial skeleton, vertebrae, especially thoracic spine is most commonly involved, whereas proximal femur is the most common site for metastases to long bones in lung cancer.[2,3] But scapular metastasis is found to be rare in bronchogenic carcinoma.

A 40-year-old non-smoker female presented with progressively increasing dull aching pain over right shoulder for last 2 months. This was followed by development of left-sided pleuritic chest pain with heaviness, dyspnea on exertion and productive cough for last 1 month. The shoulder pain was aggravated at night, relieved by non-narcotic analgesics. There was no history

of trauma or swelling surrounding the joint. Later the breathlessness was at rest and relieved by aspiration of hemorrhagic fluid from the left pleural space. There was history of two episodes of scanty hemoptysis. There was no history of fever, but history of significant weight loss and anorexia was present.

General survey revealed anemia, clubbing, but no palpable superficial lymph node. Her temperature was 97°F, respiratory rate 24 breaths/minute, pulse rate 110 beats/minute, and blood pressure 110/70 mmHg. Stony dull percussion note and diminished vesicular breath sound were detected on left side of the chest, suggestive of left-sided pleural effusion. Movement of right shoulder joint was not restricted in any direction, but there was a diffuse tenderness over the scapula. No sensory and motor loss was noted during examination of right superior extremity and shoulder joint. Complete blood count and blood biochemistry were normal, except hemoglobin concentration 9 g/dL and total serum calcium 13.2 mmol/L. Sputum for acid fast bacilli and malignant cells were negative. Chest X-ray (postero-anterior view) showed left-sided encysted pleural effusion with osteolytic lesion of right scapula. Plain X-ray of right shoulder joint showed an osteolytic lesion involving upper part of the scapula adjacent to joint cavity [Figure 1]. Analysis of aspirated hemorrhagic fluid revealed lymphocyte predominant exudative effusion with low adenosine deaminase (26.7 IU/L) level. Ziehl Neelsen stain showed no acid fast bacilli, but papanicolaou stain revealed malignant cells. Contrast-enhanced computed tomography (CECT) scan of the thorax showed left lung mass with ipsilateral encysted pleural effusion and an osteolytic lesion in right scapula [Figure 2]. CT-guided fine-needle aspiration cytology (FNAC) of right scapular lesion revealed metastatic squamous cell carcinoma [Figure 3a] and CT-guided FNAC of left lung mass showed non-small cell carcinoma [Figure 3b]. Fiberoptic bronchoscopy revealed no abnormality. Radionuclide bone scan showed increased uptake of radiotracer in right scapula due to metastases. Ultrasound of abdomen and CECT brain revealed no abnormality. Hence, the diagnosis was poorly differentiated squamous cell carcinoma of left lung complicated by ipsilateral, encysted, malignant pleural effusion and metastases to right scapula.

Figure 1: X-ray of right shoulder joint showing an osteolytic lesion in scapula

80% cases of bone metastases are due to prostate, breast, and lung cancers.[4] Other important primary sites for bone metastases are kidney, bladder, and thyroid.[4] Vertebrae, proximal femur, pelvis, ribs, sternum, proximal humerus, and skull are affected in descending order of frequency.[5] Scapula is rarely involved. Bone metastases in lung cancers are usually caused by hematogenous dissemination of tumor cells. Bone metastases may be asymptomatic or may present with bone pain, swelling, spinal cord compression with paraplegia, and pathologic fracture.[4,6] Hypercalcemia is mainly found in cases of bone destruction.[7] Bone pain is the most common symptom for metastatic bone tumors, may sometimes be the first presentation (25%) without symptoms of lung tumor itself, and adenocarcinomas are the most common histological types of lung cancers associated with bone metastases.[2,8] In our case, right shoulder pain due to osteolytic metastasis to scapula was the presenting symptom of non-small cell carcinoma of contralateral lung—a very rare clinical presentation. This pain was followed by development of distressing respiratory symptoms due to tumor itself and ipsilateral pleural effusion.

Bone metastases may be osteolytic due to osteoclast activity or osteogenic, characterized by new bone formation due to osteoblastic activity.[9] Osteolytic lesions (>1 cm) are best detected by plain radiography and associated with hypercalcemia which was noted in our case.[7,10] Osteogenic lesions may readily be detected using radionuclide bone scan, characterized by increased uptake of radiotracer (Tc^{99}) at the site of lesions, and increased bone density or sclerosis is seen on plain radiograph.[11] Osteoblastic lesions are associated with high serum alkaline phosphatase level and may produce hypocalcemia in the extensive lesions.[12] Renal cell carcinomas produce mainly osteolytic lesions, whereas prostate cancers produce predominantly osteoblastic lesions. But, in most cases, metastatic lesions produce combination of these two types, as in lung cancers. In our case, it was predominantly osteolytic lesion involving right scapula which was very much evident on plain radiograph.

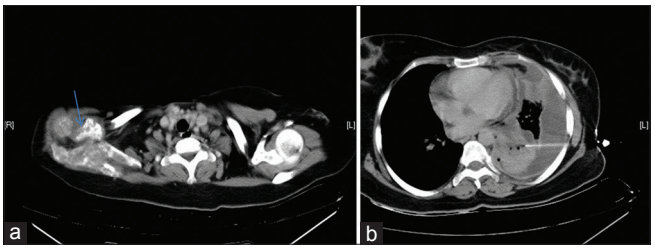

Figure 2: (a) CECT thorax showing right scapular destruction. (b) (Blue Arrow) and left sided lung mass with ipsilateral encysted pleural effusion

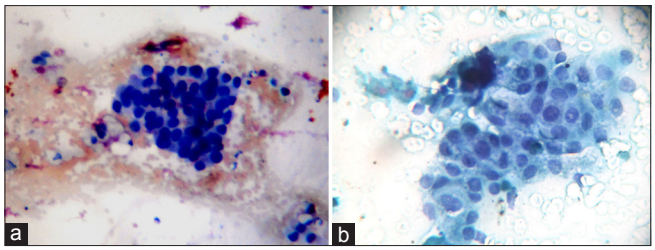

Figure 3: Microphotograph of CT-guided FNAC of the osteolytic lesion of right scapula showing metastatic squamous cell carcinoma (a) and that of left lung mass showing non-small cell carcinoma (b) (MGG stain, 10x)

Non-narcotic or narcotic analgesics, local palliative radiotherapy, bisphosphonates (like zoledronic acid) may be helpful to relieve the metastatic bone pain although cytotoxic chemotherapy should be given for stage IV squamous cell carcinoma of lung.[13,14]

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DOI: 10.4103/0970-2113.159614