

CASE REPORT

Solitary Fibular Metastasis from Hilar Adenocarcinoma of Lung

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ABSTRACT

Adenocarcinoma constitutes 25 to 30% of cases of bronchogenic carcinoma. Most cases of pulmonary adenocarcinoma present as peripheral nodules rather than a central mass. It is the most common type of bronchogenic carcinoma in non-smokers. Skeletal metastasis from bronchogenic carcinoma occurs most commonly to the spine, pelvis and femur. Solitary skeletal metastasis especially to bones below the elbow and knee is rare. We present a case of adenocarcinoma arising from right intermediate bronchus with solitary skeletal metastasis to the left fibula. Multimodality imaging is used for the diagnosis and characterization of the mass as well as the metastasis.

Keywords: Adenocarcinoma, Metastasis, Fibula, Multimodality imaging.

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INTRODUCTION

Bronchogenic carcinoma is a leading cause of death from cancer in men and women (23%) throughout the world.¹ Cigarette smoking is the single most important etiologic factor leading to bronchogenic carcinoma. Non-small cell bronchogenic carcinoma accounts for approximately 80% of bronchogenic carcinoma. Non-small cell carcinoma consists of adenocarcinoma (25-30%), squamous cell carcinoma and large cell undifferentiated carcinoma.²

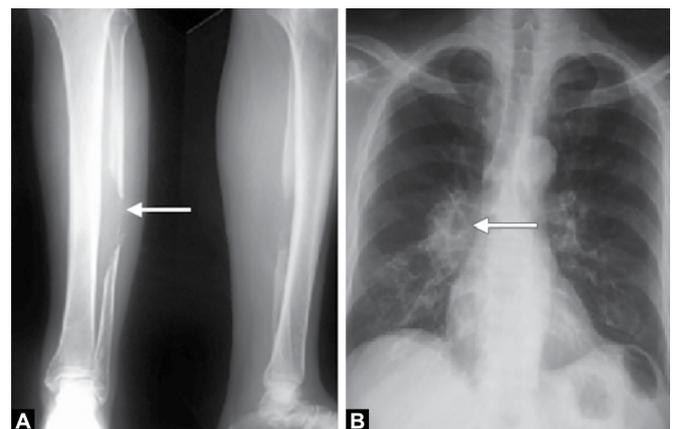
Adenocarcinoma is the most common type of cancer in women and nonsmokers. It is associated with diseases that cause focal or diffuse fibrosis and presents usually as solitary pulmonary nodules/upper lobe lesions. A central location of an adenocarcinoma of lung is relatively uncommon.³ Bronchogenic carcinoma frequently

metastasizes to brain, adrenal and bone. The most common sites of skeletal metastasis include vertebra, pelvis and femur. However, appendicular metastasis distal to the knee and elbow is rare (due to relative avascularity).⁴

CASE REPORT

A 62-year-old male presented with history of pain and swelling in the left leg since 4 months. He also had productive cough for the same duration with the sputum occasionally streaked with blood. The patient is a chronic smoker, smoking 1 to 2 packs of beedis/day for the past 30 years. He did not give a previous history of pulmonary tuberculosis and was sputum negative for tuberculosis. An X-ray of his chest and left leg was obtained on 29-1-14, which revealed osteolytic destruction of middle 1/3rd of his left fibula (Fig. 1A) and a right hilar mass (Fig. 1B). A contrast-enhanced computed tomography (CT) scan of the chest was done for the evaluation of the right hilar mass. A heterogeneously enhancing right hilar mass measuring ~6.8 × 6.9 × 5.7 cm with mediastinal extension (Fig. 2A) and mediastinal lymphadenopathy (Fig. 2B) was noted. Bilateral enlarged adrenal glands suggesting metastasis were also noted (Fig. 2C).

Ultrasound (Fig. 3A) with color Doppler (Fig. 3B) of the left leg revealed a soft-tissue mass with vascularity causing pathological fracture of fibula. Fine needle aspiration cytology (FNAC) of the same was performed and the microscopic examination of the aspirate characterized the lesion as metastatic deposits (Figs 4A and B).



Figs 1A and B: Left leg X-ray AP and lateral views: osteolytic destruction of middle 1/3rd of left fibula (white arrow) and (B) chest X-ray PA view: right hilar mass (white arrow)

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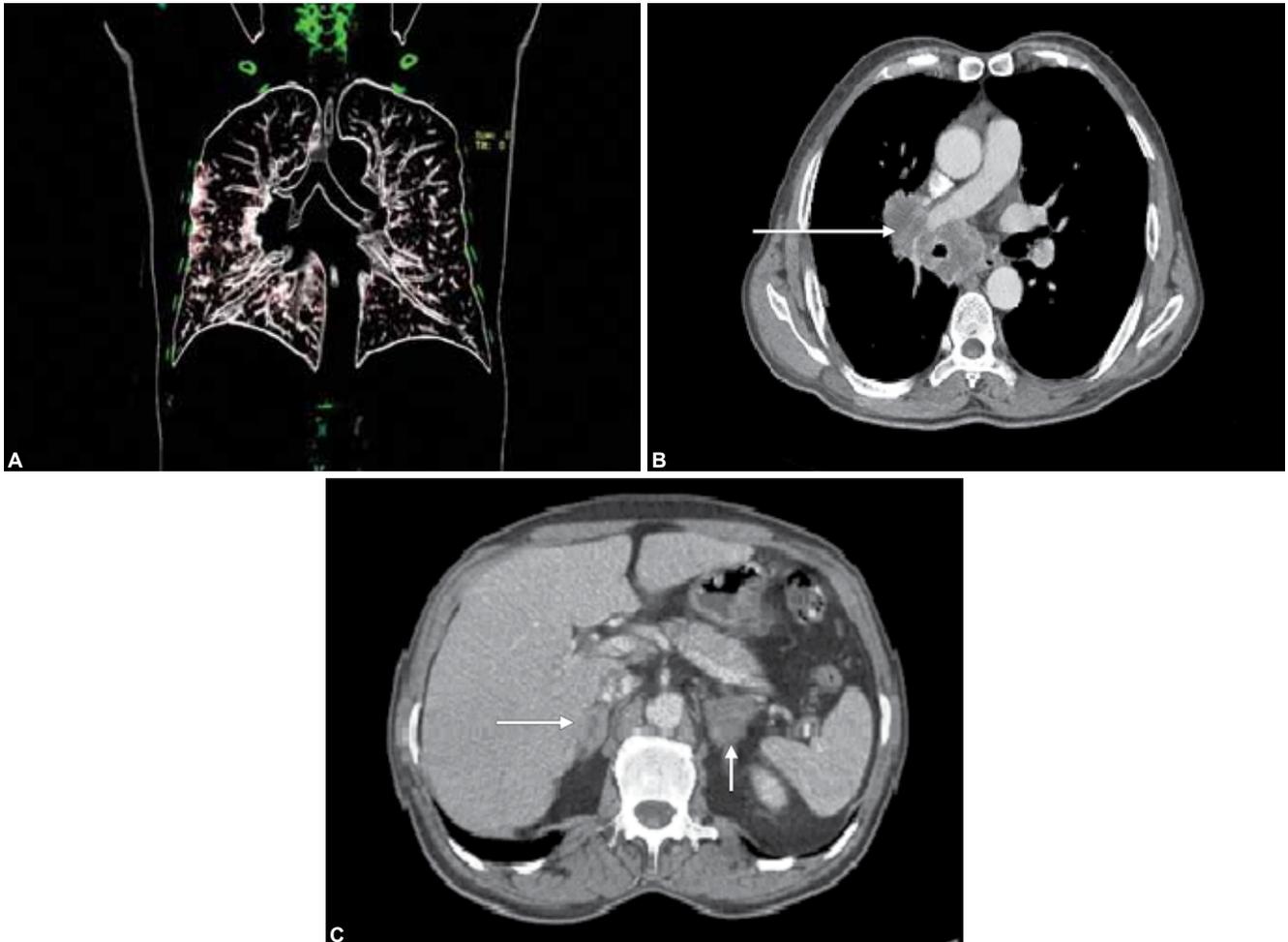
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A technetium MDP nuclear bone scan was done to rule out other skeletal metastasis. This showed increased osteoblastic activity only along the broken ends of shafts of fibula representing pathological fracture due to metastasis. Rest of the skeleton showed no abnormal uptake (Fig. 5). Bronchoscopy guided biopsy (Fig. 6) of the right

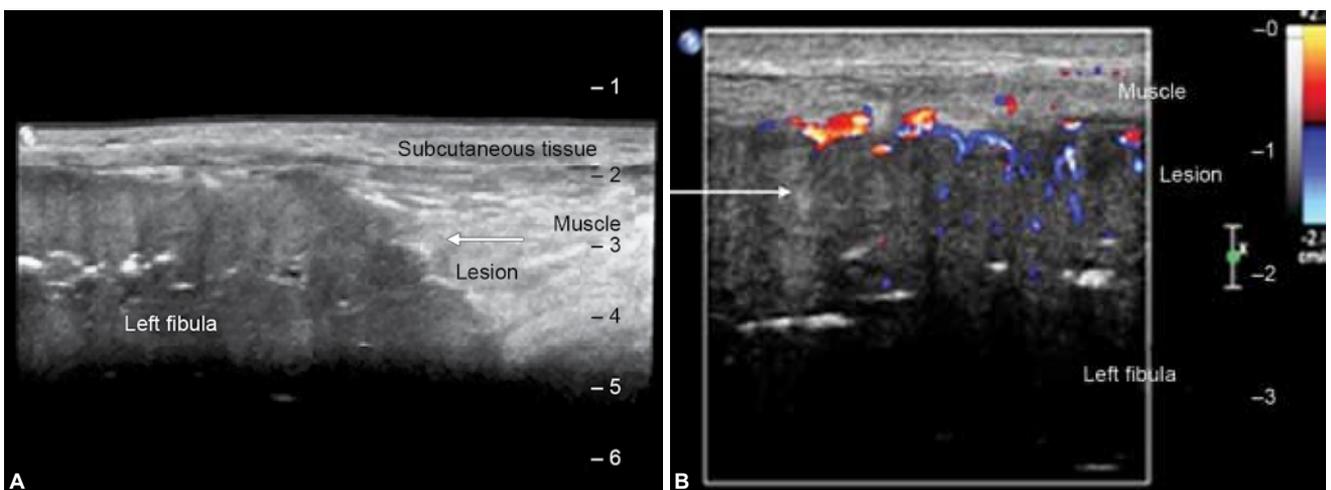
hilar lesion was done to confirm the histopathological diagnosis (Figs 7A to C).

DISCUSSION

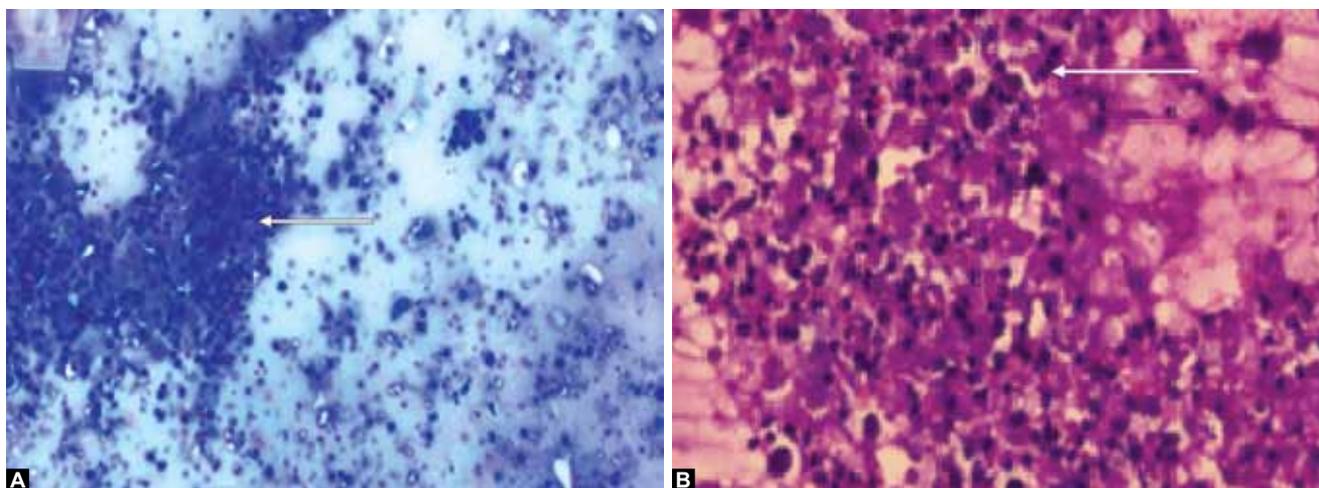
Adenocarcinoma is the most common cell type representing 50% of all cases and is the most common cell type



Figs 2A to C: (A) The image clearly depicts the ‘abrupt cut-off’ of the bronchus intermedius and the right hilar mass, (B) axial section of contrast-enhanced CT image shows an ill-defined heterogeneously enhancing lesion (white arrow) encasing the right bronchus intermedius and also the right main pulmonary trunk and (C) axial contrast-enhanced CT scan image showing bilateral enlarged heterogeneously adrenal glands suggestive of metastasis (white arrows)



Figs 3A and B: (A) Gray scale high resolution ultrasound image of a well-defined hypoechoic lesion (white arrow) causing destruction of the left fibula and (B) high resolution color Doppler scan shows vascularity within the lesion (white arrow)



Figs 4A and B: (A) Fine needle aspiration cytology of soft-tissue mass of lower end of fibula with giemsa stain (low power: magnifications, 10x) shows necrotic background with inflammatory cells and clumps of malignant cells with round hyperchromatic nuclei and abundant cytoplasm (white arrow) and (B) hematoxyllin and eosin stain (high power: magnification, 40x) shows necrotic background with few tumor cells (white arrow)

in nonsmokers. Computed tomography usually demonstrates a solitary peripheral pulmonary nodule or mass, which can be spiculated or lobulated. It is often subpleural and asymptomatic because of its peripheral location. It may be associated with concomitant lung disease, such as focal and diffuse fibrosis. It is a slower-growing tumor; however, it can metastasize early. Subclassification is very difficult, with mixed subtype as the most common subtype. In 1981 World Health Organization classification, four subtypes of lung adenocarcinoma were recognized including acinar, papillary, bronchioloalveolar (BAC) and solid carcinoma with mucus production.⁵

Central location of pulmonary adenocarcinoma is less common and has the propensity to metastasize early to hilar (40%) and mediastinal (27%) lymph nodes.² The mass seen in our patient is seen to arise from the right intermediate bronchus and is seen to encase right main pulmonary artery. The incidence of bony metastasis from non-small cell lung carcinoma is ~15 to 40%. Patients with adenocarcinoma are known to metastasize to the bone



Fig. 5: Technetium MDP bone scan showed increased osteoblastic response at the broken ends of shafts of left fibula (black arrows)

in the early stage.⁴ Acrometastases and appendicular metastases as a presentation of cancer are rare.⁶ Also, isolated bone metastases are uncommon in the absence of metastasis to other organs.⁷ Solitary metastasis to the

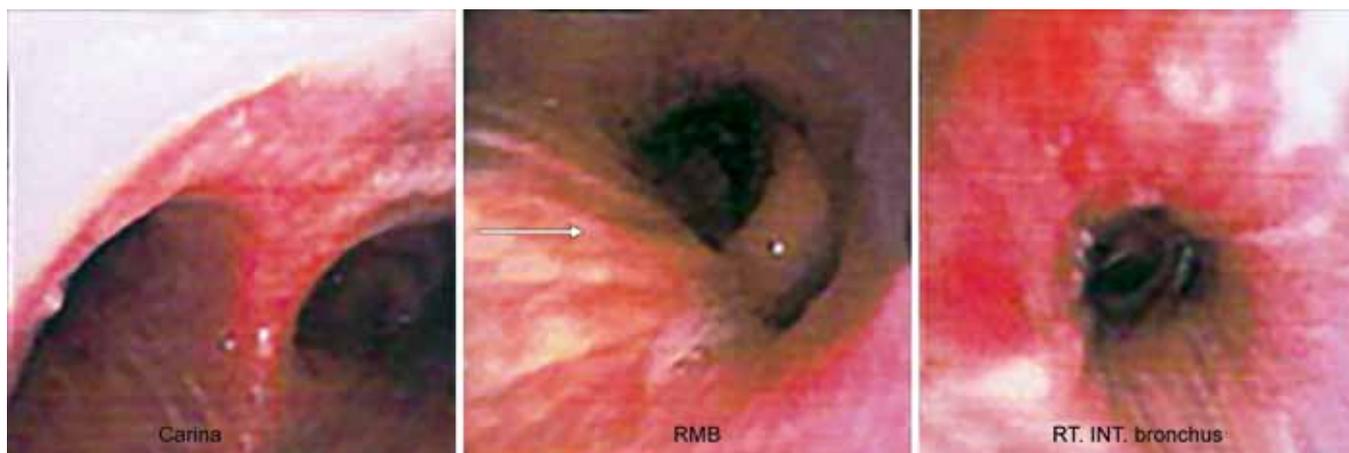
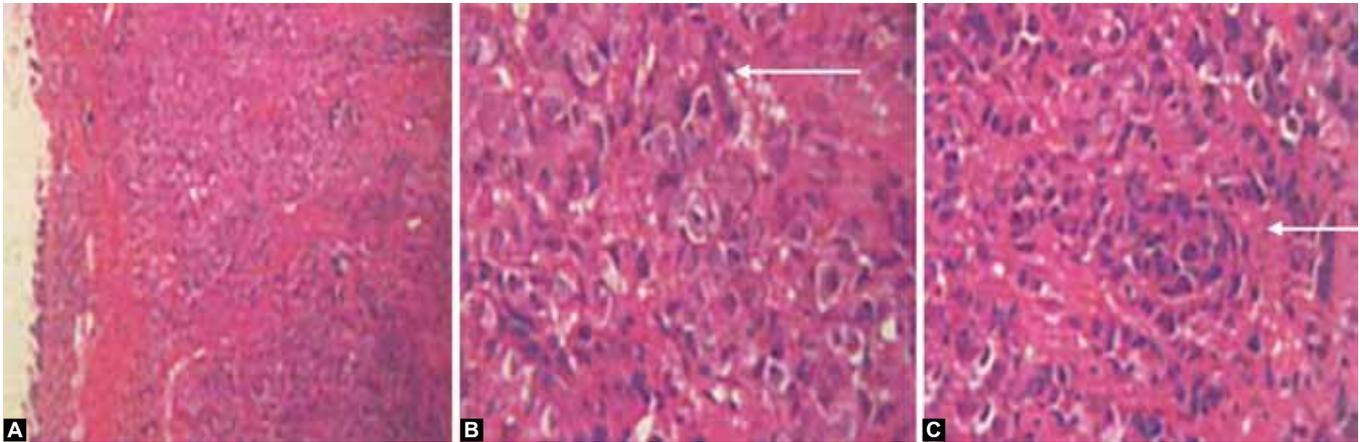


Fig. 6: Bronchoscopic images showing congested and edematous mucosa with growth at medial wall of intermediate bronchus (white arrow)



Figs 7A to C: (A) Lower-power magnification, 10× and (B and C) with high-power magnification, 40×, histopathology with H&E stain of bronchoscopic-guided mass of the right intermediate bronchus shows tumor cells (white arrows) which are large with moderate pleomorphism and hyperchromatic nuclei and abundant clear cytoplasm suggestive of adenocarcinoma (large cell type)

fibula forming a large mass leading to diagnosis of primary adenocarcinoma of the lung is rare.

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