Chest X-ray mass

P Sundaram, JM Joseph, B Trivedi, LP Naik, JM Joshi

A 30-year-old man presented with a history of dry cough and dyspnoea on exertion for two months. A right above-knee amputation had been carried out four years earlier for benign giant cell tumour at the lower end of the femur.

On physical examination, there were signs of a mass in the right lower lobe of the lung. Haematological and biochemical parameters were within normal limits. His chest X-ray and a post-contrast computed tomographic (CT) scan of the chest are shown below (figures 1 and 2). This was followed by a fine needle aspiration cytology of the right lower lobe lesion which revealed the diagnosis (figure 3).

**Questions**

1. What abnormality is shown on the CT scan?
2. What is the most probable diagnosis?
Answers

QUESTION 1
The chest X-ray reveals the presence of a mass lesion in the region of right lower lobe and a nodule in the left paracardiac area. The postcontrast CT scan of the chest shows a heterogeneously enhancing mass in the same area with involvement of the pleura.

QUESTION 2
Pulmonary metastasis may occur from primary sites like colorectum, kidney, breast, thyroid, testis, prostate, uterus, ovary, etc. With the history of amputation, the most probable differential diagnosis would include osteogenic sarcoma, chondrosarcoma, synovial sarcoma and benign giant cell tumour of bone.

In this case the aspirate revealed osteoclast-like giant cells and oval cells with eccentric nuclei, indicative of a pulmonary metastasis from a benign giant cell tumour of the bone.

Discussion

Pulmonary metastases occur most commonly from large bowel, breast, cervix, kidney, and sarcomas. The clinical presentation and behaviour of giant cell tumours of bone may vary. A surgical staging diagnosis based on clinical, radiographic and pathological findings provides an accurate picture of the natural history and metastasis usually occurs in patients with stage 3 disease. Giant cell tumour of bone is a benign but locally aggressive tumour and may metastasize to the lungs in 3.5% of cases, within two years of the initial diagnosis.2

The metastasis may have a bony shell that may at times be visible on X-ray. This may be due to the capacity of the mononuclear cells to produce osteoid bone.3 The late occurrence of pulmonary metastases from giant cell tumours of bone that have not undergone sarcomatous change four years after the initial diagnosis is emphasized. There is a favourable prognosis following early diagnosis and resectional surgery.

Final diagnosis

Pulmonary metastasis from benign giant cell tumour of the femur.

Keywords: pulmonary metastasis, giant cell tumour

Giant cell tumour

- incidence: 5% of primary bone tumours
- site: 80% in long bones
- metastasis: 3.5% of cases to lungs within two years
- histology: benign, similar to primary lesion
- prognosis: favourable following pulmonary resection and chemotherapy