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).

Figure 1 Chest X-ray

Figure 3 Cytology of the mass

Figure 2 Post-contrast CT scan

Questions

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

**BYL Nair Ch
Hospital, Mumbai
400 008, India
Department of
Respiratory
Medicine**
P Sundaram
JM Joseph
B Trivedi
JM Joshi
**Department of
Pathology**
LP Naik

Correspondence to Dr JM
Joshi

Accepted 27 June 1996

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 post-contrast 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.¹ 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.² 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

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

produce osteoid bone.³ The late occurrence of metastasis is explained by the fact that giant cells and small groups of stromal cells are often found within blood vessels near the tumour, or the cells may be dislodged from an intact lesion or during surgery, and transported in blood vessels to other sites, where they may establish later.⁴ Histologically, the secondaries are benign and identical to the primary lesion.⁵

Treatment consists of complete removal of the tumour and resection of as many nodules as possible. The outcome has been favourable in patients who received chemotherapy after surgical removal of the pulmonary lesion. Recurrent pulmonary nodules have also been found to be compatible with long symptom-free periods.²

The extreme rarity 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

1 Shepherd MP. Thoracic metastasis. *Thorax* 1982; 37: 366.

2 Bertoni F, Present D, Enneking W. Giant cell tumour of bone with pulmonary metastasis. *J Bone Joint Surg* 1985; 6: 890–900.

3 Dahlin DC. Giant cell tumour of bone: highlights of 407 cases. *AJR* 1985; 144: 955–60.

4 Pan P, Dahlin D, Lipscomb P, Bernatz P. Benign giant cell tumour of the radius with pulmonary metastasis. *Mayo Clin Proc* 1964; 39: 344–9.

5 Carrasco H, Maray JA. Giant cell tumours. *Orthop Clin North Am* 1989; 20: 395–404.