

CASE REPORT

Bilateral calcified renal metastases from osteosarcoma

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Calcified renal metastases from osteosarcoma are extremely rare. We present a case of a young female with osteosarcoma of the right ulna who developed late recurrence in the form of large metastatic calcified renal and pulmonary lesions. Review of the literature suggests that osteosarcoma metastases of the kidneys usually exhibit aggressive behaviour with poor prognosis. A brief review of the calcified renal metastases including the index case is presented.

Keywords: Renal metastases; osteosarcoma.

Introduction

Calcified renal metastases are rare lesions in osteosarcoma; only 16 cases have been reported in the English literature (based on a PubMed literature search). Furthermore, bilateral calcified renal metastases are extremely rare with only 3 reported cases^[1,2]. Renal metastases are most commonly from carcinoma of bronchus, breast and the contralateral kidney. Rarely do they arise from gastrointestinal tumours, genitourinary tumours, melanoma and sarcoma, especially osteosarcoma^[3]. The possibility of renal metastases should be considered if a patient with known malignancy exhibits hematuria or flank pain and renal masses are seen on imaging^[4].

Case report

A 24-year-old female in the third trimester of pregnancy (primigravida at 29+1 weeks of gestation) presented with increasing dyspnoea. She was undergoing follow-up for an osteosarcoma of right ulna diagnosed 11 years previously and treated with wide surgical excision followed by bone grafting. She developed local recurrence 6 months later for which amputation was done. A further local recurrence at 5 years was treated with fore-quarter amputation and chemotherapy (adriamycin,

cyclophosphamide and methotrexate). Subsequently, she developed dilated cardiomyopathy (DCM).

Chest radiography on admission showed an opaque left hemithorax with calcified lesions in mid zone and ipsilateral mediastinal shift. She was anaemic (Hb 7.1 g%) and renal function tests were abnormal (urea 107 mg/dl and creatinine 2.2 mg/dl). Bronchoscopy revealed abnormal soft tissue occluding the lumen of the left main bronchus. Bronchoscopic biopsy was consistent with metastatic osteosarcoma. Active intervention was not done due to DCM and advanced disease with pregnancy. Elective lower segment caesarean section (LSCS) was performed at 32 weeks of gestation. Eight days following LSCS, the patient presented with hematuria and abdominal pain. Renal function tests returned markedly elevated urea (135 mg/dl) and creatinine (5.4 mg/dl) levels. Abdominal radiography (Fig. 1) showed coarse and punctuate calcification in both renal fossae. Ultrasound of the abdomen (Fig. 2) demonstrated nephromegaly with diffusely scattered calcified lesions in both kidneys. Contrast-enhanced abdominal computed tomography (CT) (Fig. 3) showed enlarged kidneys with multiple calcified lesions. In addition, contrast-enhanced chest CT showed collapse of the left lung with calcified lesions and multiple nodular and calcified metastases in the right lung. Due to the associated comorbid conditions, chemotherapy was not given and the patient died 40 days after delivery.



Figure 1 Abdominal radiograph showing large soft tissue mass in bilateral renal fossae with coarse and punctate calcification.

Discussion

Renal metastases are rarely detected clinically as most are very small or only seen microscopically. Therefore radiological diagnosis is seldom possible^[5]. The metastases usually do not grow large enough to be diagnosed with imaging due to the limited survival of the patient^[1–4]. In autopsy series, renal metastases occur 2–3 times more commonly than primary renal neoplasms. Renal metastases usually reach the kidneys hematogenously^[6].

Osteosarcoma (osteogenic sarcoma) is a primary malignant tumour of the bone. The most common sites of the primary tumour are the long bones of the extremities, often the femur, tibia, fibula and humerus, with the lungs and bones being the most common sites of metastases^[7]. Recent developments in intensive multimodal therapy for osteosarcoma have prolonged the survival of patients but there has been an increase in the number of recurrences detected at atypical sites^[1]. The described cases of atypical sites include the pleura, pericardium, kidney, adrenal gland and the brain. At autopsy, the most frequent osteosarcoma metastases sites are the lungs (95%), bones (50%) and kidneys (12%)^[4]. All the reported cases of renal metastases from osteosarcoma have generally exhibited aggressive behaviour and a

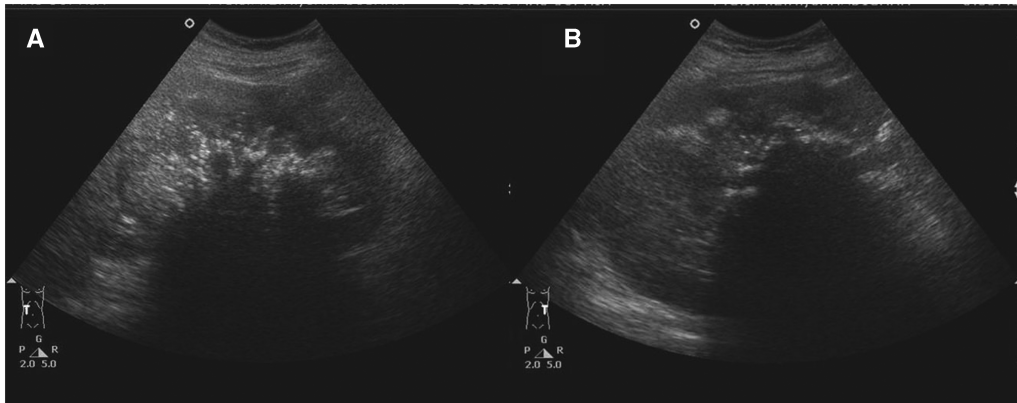


Figure 2 Longitudinal ultrasound scan of right (A) and left (B) kidneys showing diffusely scattered calcified lesions in the kidneys.

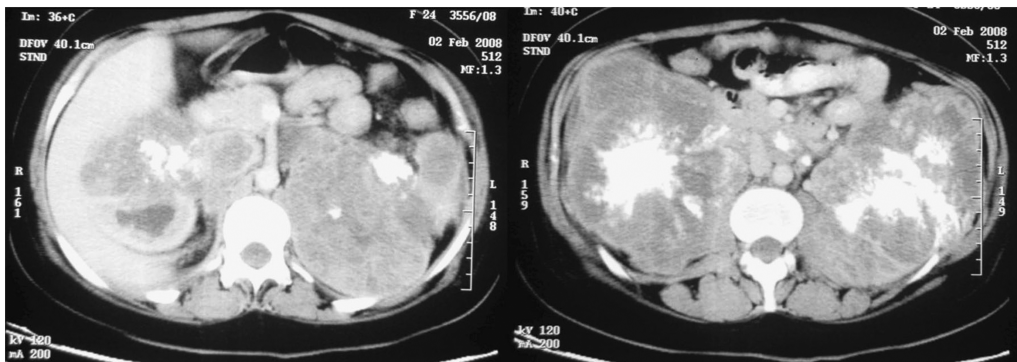


Figure 3 Contrast-enhanced abdominal CT showing large lobulated calcified soft tissue masses replacing both kidneys.

poor prognosis. Therefore, efforts should be made for early diagnosis and, if possible, curative treatment.

Renal metastases may present with symptoms of hematuria, flank pain or acute renal failure and are usually unilateral (80%). Plain radiograph shows calcification in approximately 50% of patients. Ultrasound or contrast-enhanced CT shows small to large masses in the kidneys, with or without calcification. Bone scintigraphy is useful in the detection of tumour recurrence and can detect renal metastases in 90% of cases^[1]. Complete surgical removal of the tumour should be done if the patient presents with a single renal lesion or localized disease, as late recurrences are usually resistant to chemotherapy and radiotherapy^[3,5]. Early diagnosis and resection can lead to prolonged survival of the patient.

The index patient had short duration of clinical symptoms. Imaging showed large bilateral calcified renal and left lung lesions. Bone scintigraphy could not be performed in our patient and she died within 1 month of the diagnosis of the renal lesions.

Malignancies during pregnancy are rare (0.07–0.1%) and seldom account for maternal deaths. Furthermore, primary malignant musculoskeletal tumours during pregnancy are especially rare and treatment is constrained by limitations on the use of routine therapeutic modalities (i.e. chemotherapy and radiotherapy). Huvos *et al.*^[8] suggested that osteosarcoma may be influenced by hormones during gestation, but neither the pregnancy nor the osteosarcoma adversely affect each other, and the combination of osteosarcoma and pregnancy does not alter prognosis when compared with non-pregnant women.

Conclusion

The kidneys may be involved in late relapse of osteosarcoma and the diagnosis is associated with a very poor

prognosis. As osteosarcoma patients may have prolonged survival with intensive multimodality therapy, the kidneys should be assessed in follow-up cases of osteosarcoma to enable early detection of lesions.

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