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Case report

Clear cell chondrosarcoma calcaneum – A case report and review of literature

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ABSTRACT

Chondrosarcoma is the second most common primary bone malignancy accounting for 20–25% of all bone sarcomas. However chondrosarcoma of the foot is rare with just a handful of cases being described. Among the subtypes clear cell variant is the rarest and has never been documented in the foot. We present a rare case of clear cell chondrosarcoma of the calcaneum with multiple metastases that was treated at our institute. The patient was a 62-year old male who presented to us with pain and mass in the left hindfoot with difficulty in walking for 2 years and a discharging ulcer over the lateral aspect for 4 months. Radiography showed aggressive, destructive, lytic lesion in the calcaneum with cortical breach and soft tissue invasion. Bone scan and PET-CT revealed multiple bony metastases and lung metastasis. After initial biopsy, patient underwent below knee amputation and has been in remission since the last 18 months. Given the rarity of this tumor in the calcaneum, this report highlights the importance to consider the possibility of this tumor in the calcaneum as an early diagnosis; complete metastatic workup and expeditious management can thus significantly improve prognosis.

1. Introduction

Chondrosarcoma is a cartilaginous neoplasm of bone accounting for 20–25% of all bone sarcomas most commonly involving the pelvis, shoulder girdle and the proximal femur [1]. However, chondrosarcoma is uncommon in the foot with an incidence of 0.5–2.97% of all locations [2–4].

Clear cell chondrosarcoma is the rarest subtype of chondrosarcoma comprising just 1.6–5.4% of all chondrosarcomas [5–7]. No case of clear cell chondrosarcoma involving the foot has been reported in the literature till date to the best of the authors' knowledge.

2. Case details

A 62-year old male presented to us with history of pain and swelling in the left hindfoot region for 2 years which was insidious in onset and gradually progressive in size. He also complained of an open wound over the mass for 4 months with history of purulent, foul smelling discharge. The patient complained of inability to bear weight on involved limb because of severe pain and was unable to carry out his day to day activities. For the same complaints he had sought consultation from local doctors who had referred him to us with a probable diagnosis of giant cell tumor with secondary infection.

On examination there was a diffuse swelling in the left hindfoot with stretched and shiny skin. On palpation, there was local rise of temperature associated with diffuse tenderness, variable consistency and the tumor margins were indistinct. Swelling was more prominent on the lateral aspect of the hindfoot with an ulcer inferolaterally. Ulcer had over-hanging edges, partly covered by eschar and partly covered by slough with desquamation of surrounding skin (Fig. 1).

Plain radiographs demonstrated a predominant destructive, lytic lesion involving posterior part of calcaneum with dense sclerosis of anterior calcaneum. There was considerable cortical destruction, cortical breach with invasion of adjacent soft tissues and periosteal reaction. Points of calcification were also noted (Fig. 2).

CT scan of the foot revealed cortical destruction, calcification and soft tissue extension. MRI revealed signal loss in the anterior calcaneum signifying dense sclerosis. Adjacent lobulated mass is

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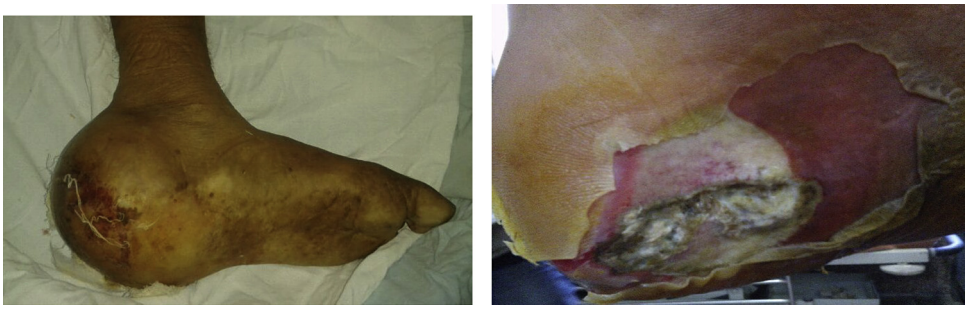

Fig. 1. Clinical photographs showing the large fungating mass over the left hindfoot region with ulcer and desquamation of skin over the infero-lateral aspect.

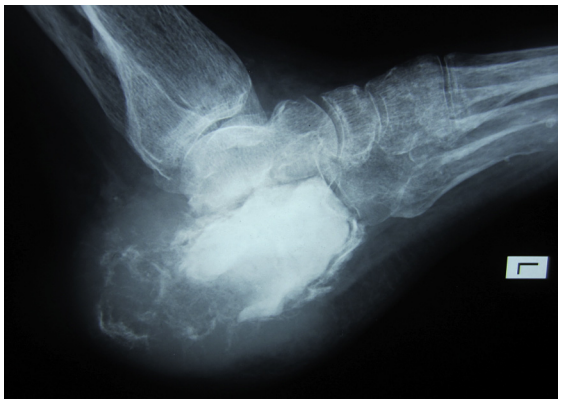

Fig. 2. Plain radiograph (lateral view) depicting the destructive, lytic lesion arising from calcaneum with cortical breach, soft issue involvement, points of calcification and dense sclerosis in the anterior calcaneum.

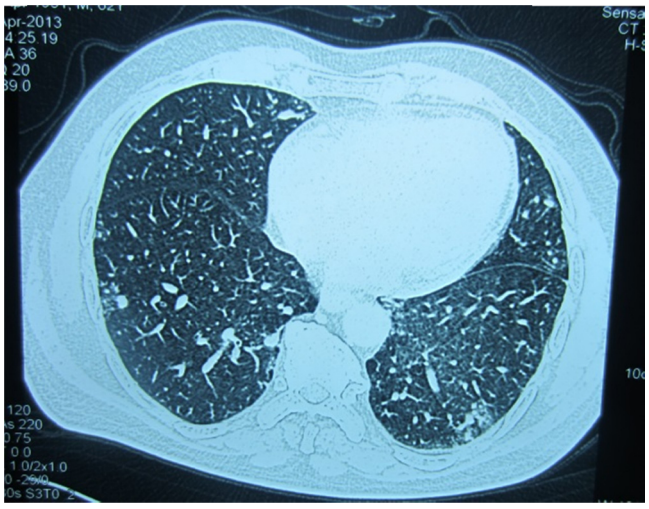

Fig. 4. HRCT chest depicting multiple metastatic nodules in both lungs.

heterogeneously hyperintense on T2 and hypointense on T1 with multiple septations. Few hemorrhagic foci and calcifications were noted in the mass. Adjacent talus and cuboid showed bone marrow edema. Similar small lesions were seen involving marrow of the inferior tibia and third metatarsal bone (Fig. 3).

On Tc99m MDP WB Bone Scan there was increased tracer uptake in the left calcaneum. Focally increased tracer uptake is also localized to sclerotic changes in the medullary cavity in the proximal shaft of right tibia, at its junction of upper one-third and lower two thirds. On hybrid SPECT-CT imaging of thorax there was increased tracer uptake localized to D12 vertebra with partial collapse. Chest X-ray and HRCT chest revealed multiple metastases in both lungs (Fig. 4).

Incisional biopsy was performed and two samples were sent, one from margin of the ulcer and one from the tumor mass, for histopathological examination. Reports revealed malignant infiltration of the skin and clear cell chondrosarcoma of the calcaneum (Fig. 5).

On immunohistochemistry, these tumor cells were positive for S-100 protein and Vimentin and they were negative for cytokeratin and CD68 (Figs. 6–9). Culture of the discharge revealed mixed bacterial growth of no significance.

Below knee amputation was done after counseling the patient and tumor-free margin was achieved as confirmed by intra operative frozen section examination (Fig. 10).

Postoperative period was uneventful and patient was advised palliative chemo-radiotherapy which he refused due to various socioeconomic reasons. Below knee prosthesis was given to

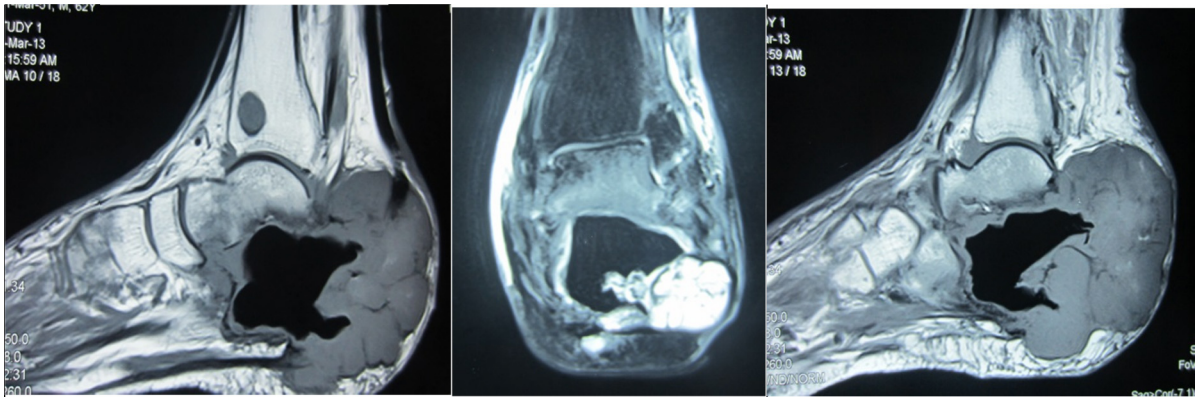

Fig. 3. Selected MRI images delineating the mass arising from calcaneus and invading the surrounding soft tissue (hypointense on T1 and hyperintense on T2) with an associated metastatic lesion in the ipsilateral distal tibia.