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Case report

Hallux valgus deformity of foot with tumoral calcinosis: An unusual presentation

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ABSTRACT

Tumoral calcinosis is an uncommon disorder and characterized by development of calcified masses within the soft tissues near the large joints such as the hip, elbow, and shoulder and rarely occurs in the foot. We report a case of tumoral calcinosis at the first meta-tarso-phalangeal (MTP) joint of foot with hallux valgus deformity associated with bunion which required resection. Surgical excision of the calcific mass alone, without surgery to the minimal hallux valgus, resulted in resolution of symptoms, without recurrence of the lesion. Subsequently, speculative etiology, differential diagnostic considerations as well as the therapeutic interventions for tumoral calcinosis are discussed taking into consideration the current literature. We conclude that tumoral calcinosis should be considered in the differential diagnosis of a painful mass that develops in the small joints of the foot.

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1. Introduction

Tumoral calcinosis is an unusual benign condition characterized by large calcified periarticular soft tissue masses composed of calcium salts, usually located around large joints. There is a primary form (idiopathic or hereditary) but tumoral calcinosis can also be found in a wide variety of conditions secondary to hyperparathyroidism, vitamin D intoxication, scleroderma and uremic tumoral calcinosis [1]. It commonly occurs in adolescents and young adults. Approximately two-thirds of the cases involve blacks and about half affect siblings [2]. Prior studies have suggested that tumoral calcinosis most commonly occurs around the hip, shoulder and elbow while it is less frequently seen in the foot and ankle [3]. We report a case of tumoral calcinosis at the first metatarso-phalangeal (MTP) joint of foot in the hallux valgus deformity patient with bunion which required resection. There were unusual findings, such as normal calcium and phosphate levels, as well as presentation with bunion of the foot, which prompted us to present this case.

2. Case report

A 45-year-old female patient visited our hospital with complaints of pain and swelling near her right first MTP joint of five months duration without any external trauma to this area. There was no family history of similar complaints, and the patient was otherwise healthy. On physical examination she had a hallux valgus deformity with 2 cm × 2 cm mass based at the medial aspect of her right first MTP joint with bunion. There was minimal surrounding erythema, no drainage, or skin breakthrough. The laboratory examination showed normal calcium (9.0 mg/dl), phosphorus (3.9 mg/dl), serum alkaline phosphatase (35 IU/L) and uric acid (3.5 mg/dl). An antero-posterior (AP) radiograph revealed a calcified, 1.5 cm × 1.5 cm, lens shaped soft tissue mass in the juxta-articular area of medial aspect of first MTP joint without any evidence of bony involvement (Fig. 1) and also showed 14° of intermetatarsal angle and 19° of hallux valgus angle. MRI of the foot was done to asses the extent and anatomical position of para-articular mass. This showed a low signal intensity lesion in calcified area and peripheral intermediate signal intensity on T2-weighted images without involving the underlying bone (Fig. 2A and B). She was treated conservatively with pain killers for 3 months but her symptoms were not improved. So she had undergone excision of mass under regional block. A 3-cm linear incision was made directly over the first MTP joint and through this incision a soft 2 cm × 2 cm × 1 cm sized mass surrounded by a yellow and white membrane was completely excised and submitted for histopathology. On sectioning, the mass showed yellowish pasty calcareous material and there was a gritty sensation. Histologically, the capsule consisted of a well-defined collagen fiber membrane with amorphous acidophilic materials inside. The mass also contained a crystalline infiltrate of calcium and giant cells. It was identified as active phase of tumoral calcinosis because central mass of amorphous or granular calcified

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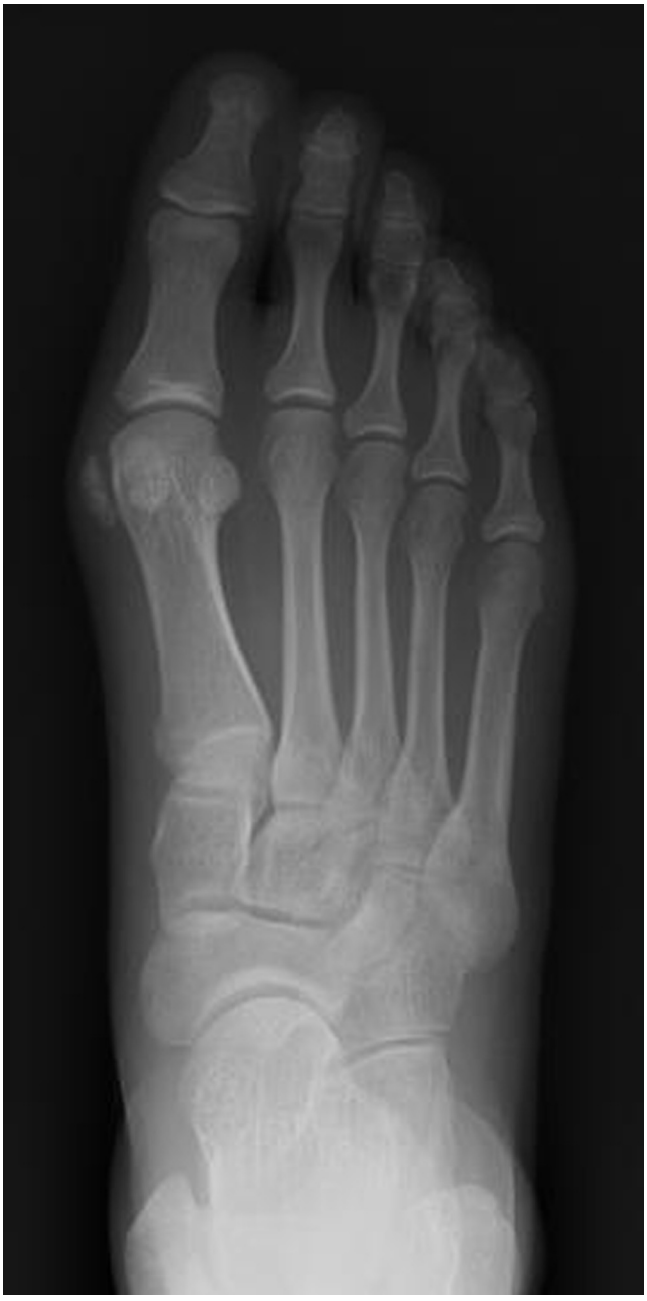

Fig. 1. AP radiograph of the right foot shows a calcified juxta-articular soft tissue lesion in the medial and proximal aspect of first MTP joint which associated hallux valgus deformity.

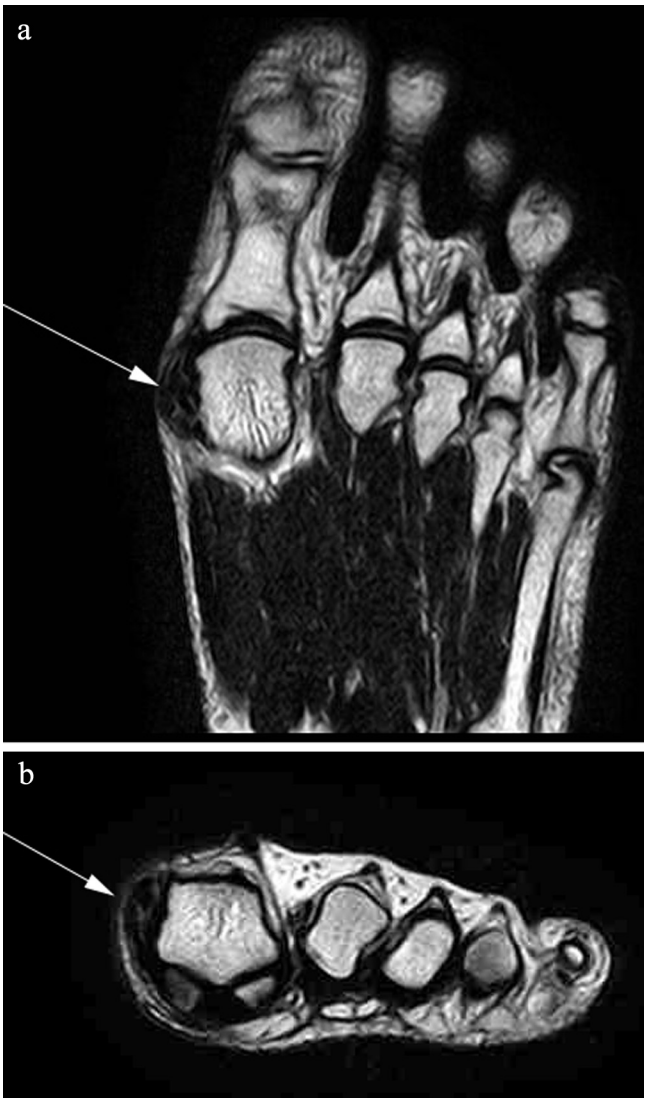

Fig. 2. (a) Coronal T2-weighted MR images of the foot show a well defined mass including an ovoid-shaped dark signal nodule suggesting calcification (arrow) and peripheral intermediate signal intensity with low signal rim, in the juxta-articular area of medial aspect of first MTP joint. (b) Axial T2-weighted MR images of the foot show a well defined mass including an ovoid-shaped dark signal nodule suggesting calcification (arrow).

material is bordered by a florid proliferation of mono- or multinuclear macrophages, osteoclast like giant cells, fibroblasts, and chronic inflammatory elements (Fig. 3). The patient has been followed up 2 years post operatively without any evidence of relapse (Fig. 4).

3. Discussion

Tumoral calcinosis is an uncommon form of extraosseous calcification characterized by large, rubbery or cystic masses occurring mainly in relation to large joints. The exact cause is not known but Smack et al. [4] formulated pathogenesis based classification of tumoral calcinosis into three types. (1) Primary normophosphatemic tumoral calcinosis; in this type patients have no known disorders of phosphate or calcium metabolism. (2) Primary hyperphosphatemic tumoral calcinosis; in this type patients have elevated serum phosphorus and normal serum calcium. The etiology is thought to be a defect in phosphate resorption. (3) Secondary tumoral calcinosis: these patients have a concurrent disease capable of causing soft tissue calcification. These include chronic renal failure with a secondary hyperparathyroidism, hypervitaminosis D, Milk-alkali syndrome and bone destruction [1]. Recurrence rate after excision is common in this type. The present case has normal serum phosphate and serum calcium levels and no evidence of previous soft tissue calcification. These features indicate that our case could be classified as primary normophosphatemic tumoral calcinosis.

Tumoral calcinosis also appears to be triggered by minor trauma. This probably serves as a trigger mechanism that leads to a chain of events, beginning with hemorrhage, fat necrosis, fibrosis, and collagenization, and ending with collagenolysis and ultimately calcification [5]. Movement and friction are thought to be important in formation of this adventitious bursa in periarticular location [6]. The bursae subsequently fill with calcified material,

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