CASE REPORT

Osteochondroma at Unusual Sites: A Case Series Report

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Abstract

Osteochondroma, the most common benign bone tumor, involves 10–15% of all bone tumors. It can occur frequently either as solitary osteocartilaginous exostosis or rarely as hereditary multiple lesions. The most common sites of occurrence are long bones of the lower arm (50%), usually the lower end of the femur and upper end of the tibia. However, involvement of the small hand and foot bones occurs in 10% of cases, pelvis in 5%, scapulae in 4%, and spine in 2%. Symptoms are not very specific. The authors present a case series of atypical sites of osteochondroma. In the present case series report, we describe a case series of osteochondroma arising from the talus, trochlea, and ribs, respectively.

Keywords: Benign bone tumor, Capitellum, Exostosis, Osteochondroma, Primary bone tumors, Ribs, Talus, Unusual sites.

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Background

In the present study, we present three cases of osteochondroma at different sites, out of which two patients with osteochondroma in talus and trochlea, respectively, were symptomatic and hence treated with surgical excision, and one patient with osteochondroma of ribs was treated conservatively without surgery as it was asymptomatic.

Introduction

Osteochondromas (osteocartilaginous exostoses) constitute most of the primary benign bone tumors.[1] Osteochondroma is usually symptomless and, therefore, the only clinical symptom is a painless, slow-growing mass on the involved bone.[2] According to the World Health Organization, this lesion is defined as a cartilage-capped bony projection arising on the external surface of bone containing a marrow cavity that is continuous with that of the underlying bone.[3] Although often asymptomatic, symptoms may arise due to compression of adjacent neurovascular structures, fractures, osseous deformities, bursa formation, or malignant transformation.[4] Traditionally, most osteochondromas are incidentally diagnosed as they are symptomless.[5] Malignant transformation is their most severe complication. However, deformities and interference with major joint function are the most frequent complaints in patients with hereditary multiple osteochondromas. Treatment should therefore aim not only at the surgical resection of the masses but also at the prevention of deformities.[6]

Case Description

Case 1

A 2-year-old boy presented with swelling over the medial aspect of the left ankle for past 3 months. Swelling was gradual in onset and slowly progressive in course. No history of trauma, fever, native treatment, or surgeries in the past. Patient had bilateral flat foot and left foot valgus. Swelling was non-fluctuant, immobile, non-translucent, and non-tender. Ankle, subtalar joint, and toe range of movements were normal. Sensation and distal pulses were intact. No scars, sinuses, or distended veins. X-ray of the left ankle showed exostosis arising from the body of the talus (Fig. 1).

Under tourniquet control, through posteromedial approach to ankle, skin incision made longitudinally midway between medial malleolus and Achilles tendon, deep fascia incised, and Achilles tendon retracted exposing deeper flexor compartment, fibro-osseous tunnel over flexor halluces longus tendon incised and posterior tibial artery with tibial nerve retracted medially: exostosis found arising from the body of talus removed using a bone chisel and sent for histopathology (Figs 2 and 3). Holoprosencephaly (HPE) confirmed the diagnosis as osteochondroma. In this case, surgical excision was performed in view of prevention of further progression of pes valgus deformity and to prevent neurovascular compromise. The patient was immobilized with below knee slab until suture removal on 12th postoperative day followed by below knee cast for another 2 weeks and then allowed weight-bearing. However the parents were informed regarding the chances of recurrence and malignant transformation in future.

Case 2

A 55-year-old female presented with right elbow deformity and restricted range of movements of the right elbow for past 2 years. No history of trauma, previous surgeries, immobilization, or native treatment in the past. No scars, sinuses, or distended

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veins. Para-olecranon fullness was present. Mild triceps and biceps wasting was present. No local warmth or tenderness. With a mass palpable in posteromedial aspect of elbow adjacent to olecranon. Elbow active and passive range of movements was between 50 and 120° and extreme 20° of supination not possible. Three-point bony morphology of elbow was normal. No distal neurovascular deficits. X-ray and computed tomography (CT) scan of right elbow showed an exostosis arising from the trochlea of right distal humerus (Fig. 4).

Under tourniquet control, with the patient positioned in left lateral position, elbow flexed, and forearm and hand lying over the side of the table, through posterior approach to elbow without olecranon osteotomy, skin incision of 10 cm length made longitudinally and ulnar nerve isolated and protected; exostosis from trochlea removed using bone chisel and sent for HPE (Fig. 5). Normal full range of movements of elbow verified postoperatively after excision of exostosis on the table. Histopathology diagnosis proved to be an osteochondroma; patient's elbow was immobilized with above elbow slab for 2 days, followed by gentle elbow range of movement exercises thereafter. Patient regained her full range of elbow movements postoperatively.

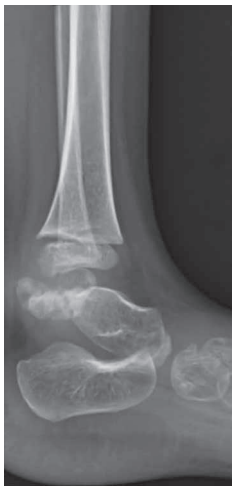

Fig. 1: Radiograph of talus osteochondroma

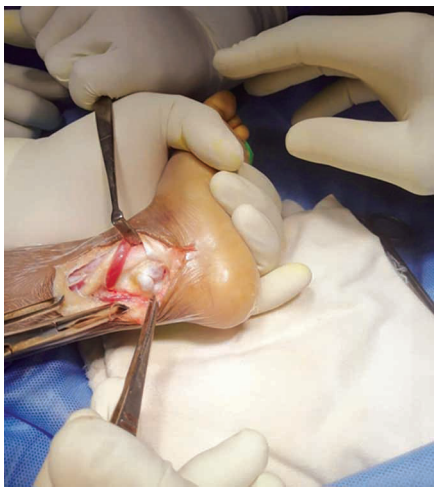

Fig. 2: Intraoperative picture of talus osteochondroma

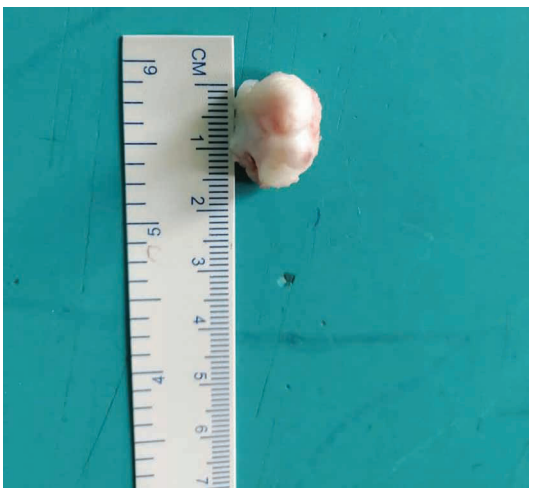

Fig. 3: 1.5 cm measuring osteochondroma excised from talus

Case 3

A 2½-year-old female baby was brought by the mother with swelling over left chest wall. Swelling was gradual and insidious in onset, insiduous nonprogressive in course, and not associated with fever, pain, or breathing difficulty, baby was asymptomatic; swelling was noticed only by the mother incidentally. On examination, there was an immobile, nontender, hard bony swelling palpable over

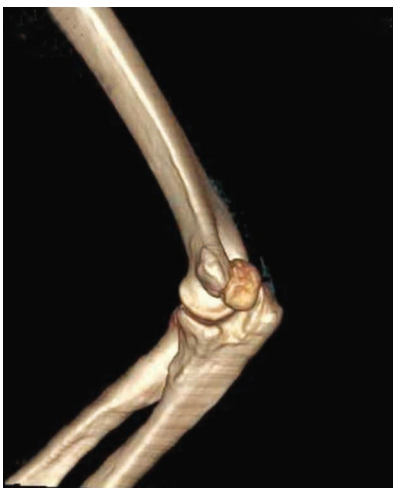

Fig. 4: Three-dimensional CT picture of osteochondroma arising from trochlea

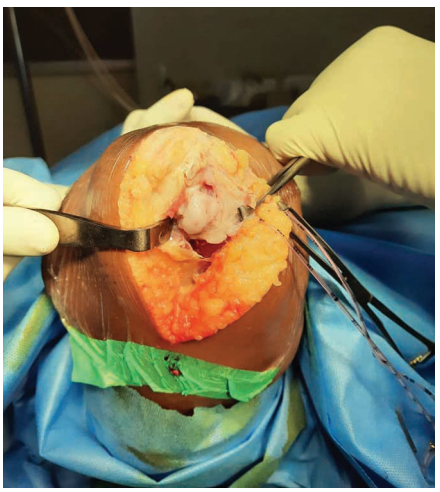

Fig. 5: Intraoperative picture of trochlear osteochondroma

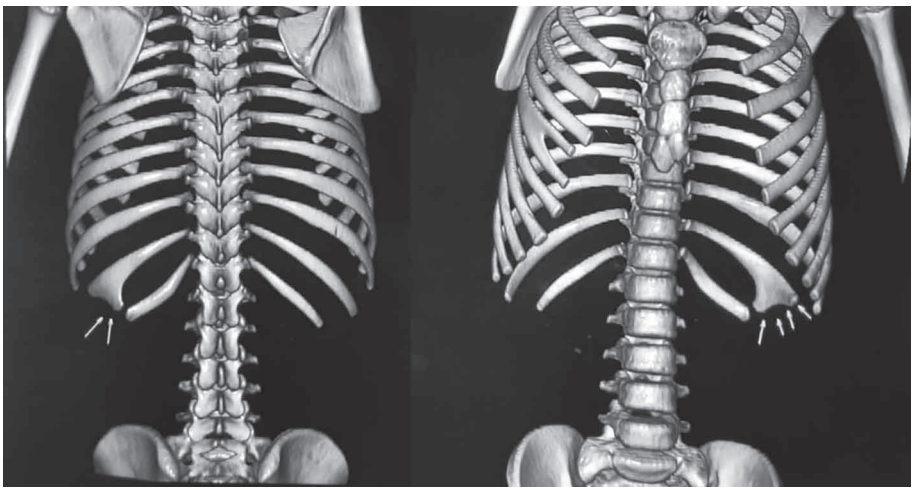

Fig. 6: MRI picture of osteochondroma arising from rib

the posteroinferior aspect of the left 11th rib. No scars, sinuses, or distended veins. X-ray and magnetic resonance imaging (MRI) of the chest showed exostosis arising from the left 11th rib (Fig. 6). Since the baby was asymptomatic, the mother was reassured to wait and watch, and the baby was treated conservatively without any invasive procedures and insisted on regular follow-up.

Discussion

Schmale et al. reported that the occurrence rates of hereditary multiple exostosis (HME) in the bone is 70% in distal femur, 70% in proximal tibia, 50% in proximal humerus, and 40% in ribs.[7] The reported incidence of malignant degeneration of the exostoses varies greatly, ranging from 3 to 25%.[8] Osteochondromas are the most often asymptomatic, but complications can arise, in particular, if the tumor is voluminous or if it is located in an at-risk anatomic site.

Three types of complications occur:

- Extrinsic, secondary to compression or irritation of an anatomical structure neighboring the exostosis;
- Intrinsic, related to a fracture of the base of the pedicle or a malignant transformation;
- Mixed, related to bone deformations and interference with joint clearance, most often encountered in multiple exostoses disease.[9]

In our study, osteochondroma arising from talus is excised as it was causing pes valgus deformity and to avoid neurovascular jeopardy and tarsal tunnel syndrome if left untreated.[10]

Osteochondroma arising from trochlea was excised to regain the functional range of movement of elbow.[11]

Asymptomatic 11th rib osteochondroma was left undisturbed as it was not leading to any potential deformity or functional impairment.[12]

Conclusion

A suspicion of an osteochondroma at unusual locations is mandatory in narrowing down any differential diagnoses. Depending upon the site, neurovascular involvement, functional impairment status, intra-articular extension, visceral involvement, and deformity causing potential of benign osteochondroma, it may need surgical excision or can be treated conservatively if asymptomatic and if no morbidity is anticipated.

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References

1. Calafiore G1, Calafiore G, Bertone C, et al. [Osteochondroma. Report of a case with atypical localization and symptomatology]. Acta Biomedica de L'ateneo Parmense: Organo Della Societa di Medicina e Scienze Naturali di Parma 2001;72(5–6):91–96. PMID: 12233271.
2. Chrisman OD, Goldenberg RR. Untreated solitary osteochondroma. Report of two cases. J Bone Joint Surg Am 1968;50(3):508–512. DOI: 10.2106/00004623-196850030-00009
3. Kitsoulis P, Galani V, Stefanaki K, et al. Osteochondromas: review of the clinical, radiological and pathological features. In Vivo 2008;22(5):633–646. PMID: 18853760.
4. Tepelenis K, Papathanakos G, Kitsouli A, et al. Osteochondromas: an updated review of epidemiology, pathogenesis, clinical presentation, radiological features and treatment options. In Vivo 2021;35(2): 681–691. DOI: 10.21873/invivo.12308
5. Garcia RA, Inwards CY, Unni KK. Benign bone tumors—recent developments. Semin Diagn Pathol 2011;28(1):73–85. DOI: 10.1053/j.semdp.2011.02.013
6. Saglik Y, Altay M, Unal VS, et al. Manifestations and management of osteochondromas: a retrospective analysis of 382 patients . Acta Orthop Belg 2006;72(6):748–755. PMID: 17260614.
7. Schmale GA, Conrad EU, Raskind WH. The natural history of hereditary multiple exostoses. J Bone Joint Surg Am 1994;6(7):986–992. DOI: 10.2106/00004623-199407000-00005
8. Gordon SL, Buchanan JR, Ladda RL. Hereditary multiple exostoses: report of a kindred. J Med Genet 1981;18(6):428–430. DOI: 10.1136/jmg.18.6.428
9. Lee KCY, Davies AM, Cassar-Pullicino VN. Imaging the complications of osteochondromas. Clin Radiol 2002;57(1):18–28. DOI: 10.1053/crad.2001.0719
10. Suranigi S, Rengasamy K, Najimudeen S, et al. Extensive osteochondroma of talus presenting as tarsal tunnel syndrome: report of a case and literature review. Arch Bone Jt Surg 2016;4(3): 269–272. PMCID: PMC4969376; PMID: 27517075.
11. Shariatzadeh H, Jafari D, Taheri H, et al. Intra-articular osteochondroma of the elbow: a case report. J Shoulder Elbow Surg 2010;19(3):e1–e4. DOI: 10.1016/j.jse.2009.09.013
12. Maeda K, Watanabe T, Sato K, et al. Two cases of asymptomatic rib exostosis treated by prophylactic surgical excision. J Pediatr Surg Case Reports 2017;20:24–28. DOI: 10.1016/j.epsc.2017.03.004