Asian Journal of Advances in Medical Science

4(1): 168-171, 2022

SOLITARY DIAPHYSEAL EXOSTOSIS OF THE ULNA: A CASE REPORT OF AN UNCOMMON PRESENTATION

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AUTHORS' CONTRIBUTIONS

This work was carried out in collaboration between both authors. Author JGA performed the diagnosis and surgery treatment of the patient and made a critical revision of the manuscript. Author IPA performed surgery treatment too and made data collection, study design and drafting of the article. Both authors read and approved the final manuscript.

Received: 04 February 2022
Accepted: 05 April 2022
Published: 10 May 2022

Case Report

ABSTRACT

Background: Reporting a case of osteochondroma in an uncommon location in a pediatric patient.
Presentation of Case: A female patient with a history of limited pronation in the right forearm due to a solitary lesion in anterolateral part of distal third of the ulna, features suggesting ostechondroma both in imaging and histopathology.
Discussion: Distal ulnar exostosis are described in the literature in relation with multiple hereditary exostoses disease and deformities in ulna or both forearm bones requiring a surgical intervention but a solitary isolated forearm exostosis is rare.
Conclusion: Osteochondromas in the forearm are rare but they should be considered in the differential diagnosis if features are suggesting it.

Keywords: Osteochondroma; forearm; ulna.

1. INTRODUCTION

Ostechondroma is a hamartoma that develops from an aberrant physeal cartilage, which grows as a bony projection arising on the external surface of bone following normal enchondral ossification. The cortical as well as the medullary part of this tumor continues without interruption with the healthy bone. They can present as solitary osteochondromas, which represent 35-46% of benign bone neoplasm, or be part of hereditary multiple exostoses (HME) or Trevor disease. Malignant transformation occurs in around 1% of solitary ones whereas the rate is higher in HME reaching data up to 5-25%.

It is normally found in the immature skeleton of children and adolescents. They most commonly arise from the appendicular skeleton on the metaphyseal region of long bones. Lower limb represents 50% of cases especially in the distal femur or proximal tibia and upper limb is affected in around 20%, proximal humerus being most common and hands and scapula less common areas [1]. A solitary isolated forearm exostosis is a rare presentation [2,3,4].

2. PRESENTATION OF CASE

A 12 year girl with no personal or family history to highlight, presented with complaint of pain and

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progressive swelling of the right forearm for 1 year, along with a limited range of motion as compare to her contralateral side (Fig. 1). In the physical examination a hard mass were palpable in the deep volar ulnar area without neurovascular alteration. She reaches 10º of pronation in the right forearm in comparison with 85º of the contralateral side. Supination in both forearms were 85º. Her daily living activities were restricted due to this deficit.

X-rays showed a bony growth with a broad base from the distal third of ulnar extending to the volar and radial side (Fig. 2). No other palpable lesions were found during physical examination.

Her MRI showed a pedicle of about 17.8 mm longitudinally x 3.8 mm transversely, with a cortical and medullary continuation with the underlying bone (Fig. 3). The hyaline cartilage cap was thinner than 1.5 mm. It was markedly indenting the deep and superficial flexor. It was not abutting or involving the neurovascular structures.

In the operating room, using X-ray guidance, a volar approach over the dome of the exostosis were done. The lesion was extended on the radial edge provoking an impingement that limited pronation movement. It was removed with a marginal resection at the base of stalk including the perichondral ring. No neurovascular structures around were affected for this mass. The excised bony tumor showed the typical cartilaginous cap of an ostechondroma with a measured of 2.0 x2.0 cm (Fig. 4). The specimen was sent for histopathology which showed the features of an osteochondroma confirming the diagnosis.

Post-operatively the patient was instructed to start early range of motion exercises.

The patient was asymptomatic with a complete forearm range of motion in both sides (Fig. 5) after a follow up of one month. The patient was followed for a period of one year, there was no recurrence although we still controlling the lesion until the physis are closed.

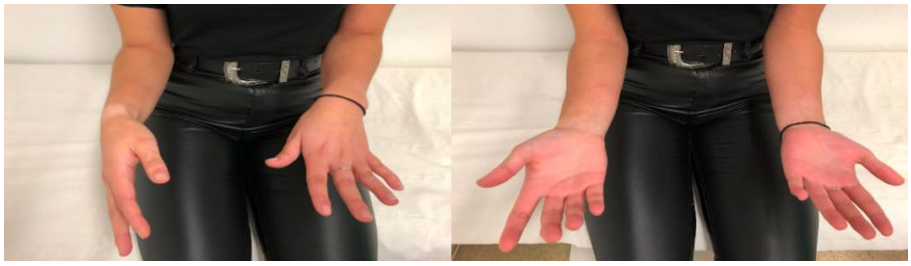

Fig. 1. Pre-operative pronation deficit of the right forearm compared to her contralateral side

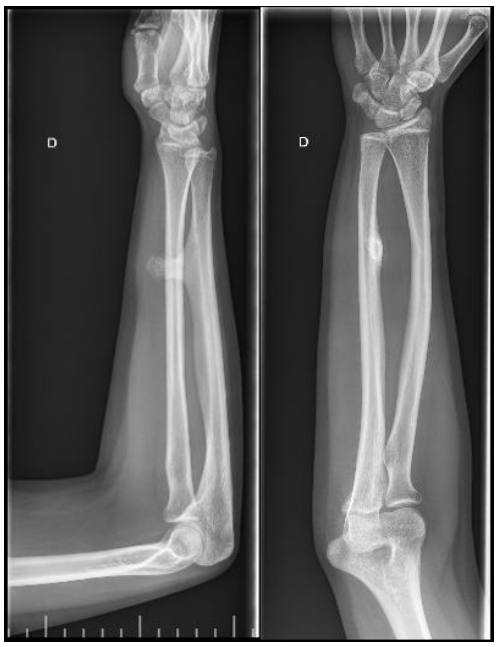

Fig. 2. Lateral and anterolateral x-ray view of the right forearm

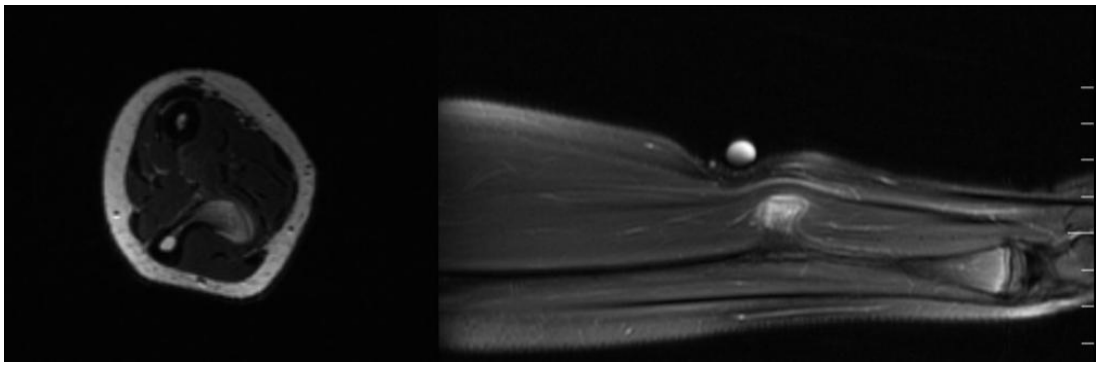

Fig. 3. Axial and sagital T2 MRI of the ulnar lesion

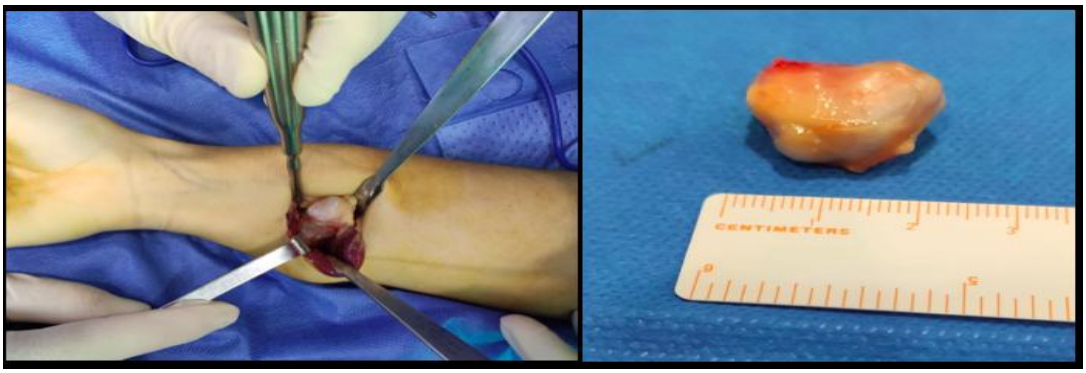

Fig. 4. Volar approach over the sessile exostosis in the distal third ulnar diaphysis that expanded to the volar and radial side blocking the pronation

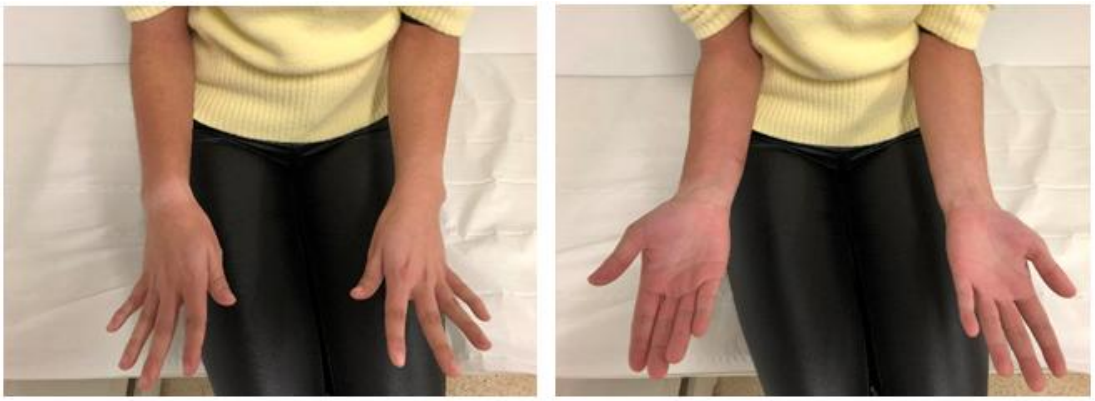

Fig. 5. Complete restore of forearm range of motion of the right forearm comparing with the contralateral side reaching 75º of pronation and 85º of supination

3. DISCUSSION

Forearm osteochondromas are described in the literature predominatly in reference to HME [5] but primary benign bone tumors of ulna are extremely rare representing less than 1% of all lesions in this bone [6]. They can present as simple swelling or deformities due to the shortening of the ulna because of defective metaphyseal remodelling and asymmetrical retardation of longitudinal bone growth, limited joint function, bowing of one or both forearm bones, ulnar tilt of the distal epiphysis of the radius, ulnar deviation of the hand, progressive translocation towards the ulna of the carpus and even radial head dislocation [2].

Masada et al. [7] classified forearm deformities caused by HME into three types based on the

presence or absence of radial head dislocation and the site of the tumor, however solitary isolated osteochondroma located in the forearm in a paediatric patient is a rare entity almost not describe in the literature [2,3,4,6,8]. Aycan et al. reviewed their database identified 23 cases with primary bone tumors and tumor like lesion involvement ulna where they describe 3 cases (13%) of children with the distal or mid-diaphysis osteochondroma of the ulna that were resected.

Although x-rays are often diagnostic, additional imaging modalities including magnetic resonance, bone scintigraphy, ultrasonography or computed tomography could be employed in their evaluation, overall when they are symptomatic or are placed in an uncommon locations. It could help in the differential diagnosis with other variants of osteochondroma such us turret exostosis, traction exostosis, bizarre paosteal osthecondromatous proliferation and florid reactive periostitis.

Surgical procedures are offered from excision of symptomatic osteochondromas to difficult reconstructions of forearm deformities. In our case the lesion did not cause a secondary deformity and it was located far from the ulnar physis, the surgery was done to restore range of motion [9,10,11].

The local recurrence of solitary osteochondroma is most commonly associated with inadequate resection of perichondral ring in skeletally immature patients so it is recommended to control the patient until the physis are closed.

4. CONCLUSION

Osteochondromas in the forearm are rare but they should be considered in differential diagnosis if the characteristics are compatible with this lesion. In cases of an unusual location or symptomatic it is recommended additional imaging modalities such as magnetic resonance to confirm the diagnosis.

CONSENT

Patient consent was done for the presentation of the case.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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