Case report

Spontaneous Regression of Osteochondroma – A Rare Phenomenon

Chia Kok King[1], Juhara Haron[2], Nik Fatimah Salwati Nik Malek[3]

Abstract

Background: Osteochondroma is a common benign bone tumour, but its spontaneous regression is a rare occurrence. The first case was reported by Hunter in 1786. And only 30 cases were found in literature to date. Spontaneous regression of osteochondroma usually occurs in paediatric age group prior to skeletal maturation without any sequelae. The exact pathophysiology of its spontaneous regression is still not fully understood. We report a case of spontaneous regression of osteochondroma in a child after a 6-year period of follow up without needing any surgical intervention.

Keywords: Osteochondroma, bone, tumour, spontaneous regression, paediatric

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Introduction

Osteochondroma is a common benign bone tumour that typically develops during childhood with very low malignant potential. It is characterised by a bony protuberance with a cartilage cap.[1] The bone lesion can be pedunculated or wide-based sessile in appearance, and the lesion must be in trabecular continuity with the host osseous medullary canal.[2] It most commonly arises from appendicular bone, with distal femur being the most common location.[3] Most patients with osteochondroma are asymptomatic. However, some patients may experience uncomfortable sensation due to the impingement to nearby soft tissues causing neural compression, vascular compression, bursitis, and fracture in case of trauma. About 1% of the solitary osteochondroma may have the potential of malignant transformation, leading to the decision of surgical resection. [1] The symptomatic lesion is another frequent indication for surgery.[3] However, spontaneous regression of osteochondroma had been reported as the child grows, where surgical resection is unnecessary. The current treatment of osteochondroma is mainly conservative. However, surgical resection is frequently offered in complicated cases, malignant transformation and for a cosmetic purpose.[3] The regression potential of osteochondroma is highlighted in this article.

Case Report

A 12-year-old girl presented with initial progressive focal left thigh swelling with intermittent pain for two months. Physical examination revealed a focal swelling which was firm in consistency, measuring 5.0 x 4.0 cm at the medial aspect of the left thigh. No overlying skin dystrophic

1. Chia Kok King, Radiology Trainee, Dept. of Radiology, Hospital Universiti Sains Malaysia, Kelantan, Malaysia
2. Juhara Haron, Associate Professor and Consultant Radiologist, Dept. of Radiology, School of Medical Sciences and Hospital Universiti Sains Malaysia, Universiti Sains Malaysia, Kelantan, Malaysia
3. Nik Fatimah Salwati Nik Malek, Head of Department and Consultant Radiologist, Dept. of Radiology, Hospital Sultanah Bahiyah, Kedah, Malaysia

Correspondence to: Juhara Haron, Associate Professor and Consultant Radiologist, Dept. of Radiology, School of Medical Sciences and Hospital Universiti Sains Malaysia, Universiti Sains Malaysia, Kelantan, Malaysia. E-mail: *drjuhara@usm.my*

change. The swelling did not cause a restriction in daily activities. A pedunculated cauliflower-like osteochondroma at the medial part of the distal femur was confirmed on plain radiograph and MRI with a thin fibrous cartilage cap. She was managed conservatively with yearly follow up with radiograph for over six years, which she only complained of minimal discomfort on pressure without any significant pain.

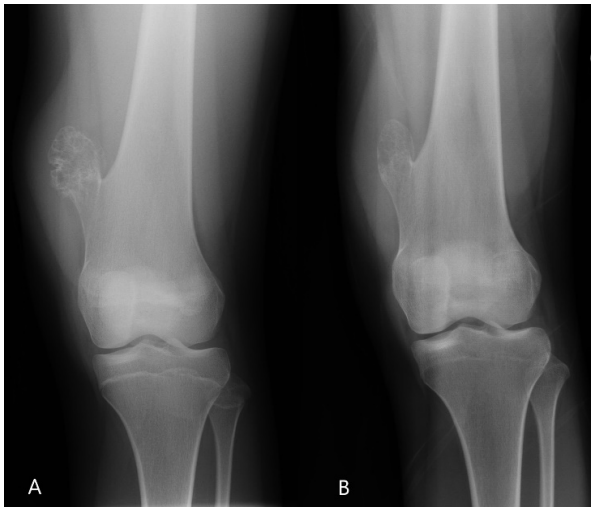

Figure 1: AP view of left knee plain radiograph on (A) initial visit and (B) after six years, showing the 30% reduction in the size of the osteochondroma.

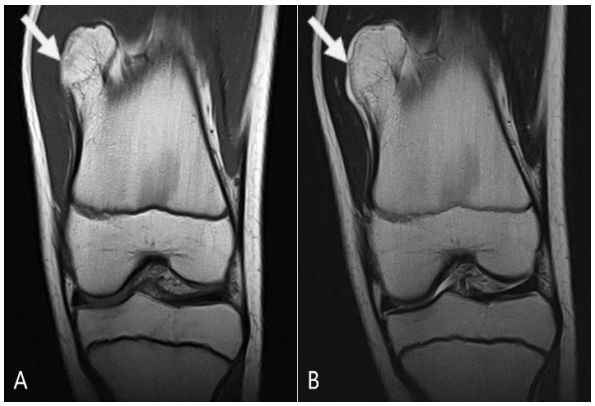

Figure 2: MRI of the left knee in coronal reconstruction. Thin fibrous cartilage cap (arrow) which appears hypointense on (A) T1-weighted image and hyperintense on (B) T2-weighted image.

The radiograph at six years follow up showed loss of cauliflower-like appearance, as well as a 30% of size reduction. A repeat MRI revealed the disappearance of the fibrous cartilage cap. The finding is consistent with spontaneous regression of osteochondroma. No feature of malignant transformation was observed on MRI. She was treated conservatively with surveillance MRI.

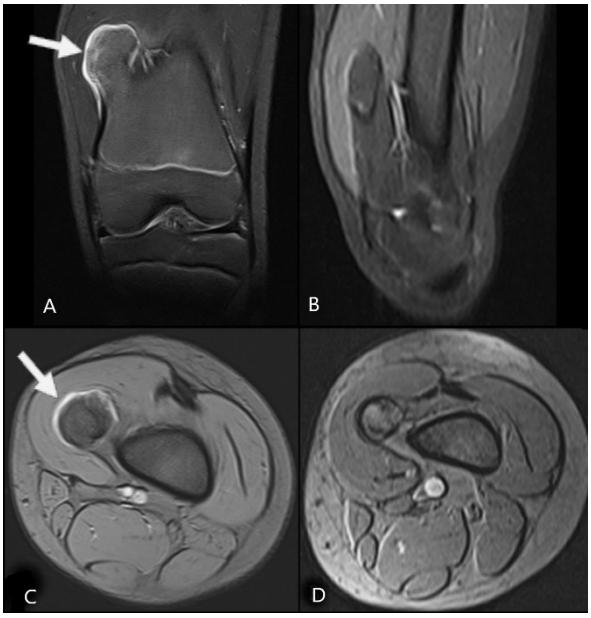

Figure 3: MRI fat-saturated T2-weighted images of the left knee in coronal and axial reconstructions on (A, C) initial visit and (B, D) after six years, showing the disappearance of hyperintense fibrous cartilage cap (arrow).

Discussion

Hunter reported the first case in 1786, which then published in 1835.[4] Currently, only 30 case reports of spontaneous regression were reported ever since.[5] Spontaneous regression of osteochondroma usually occurs in the paediatric age group before skeletal maturation without any sequela. The exact pathophysiology of its spontaneous regression is still not fully understood. However, three theories were proposed to explain the mode of regression:

1. Incorporation theory: Osteochondromas maturing before growth plate closure are incorporated into bone growing in the vertical axis.[6]
2. Absorption theory: After growth plate closure, some osteochondromas will be repaired via the remodelling process, resulting in regression of the tumour.[7]
3. Fracture theory: Fracture of an osteochondroma activates the physiological process of tumour resorption.[8]

Vanishing osteochondroma was also reported in the literature when more than 70% decreased in tumour dimension was observed.[5]

In our patient, the osteochondroma is regressing before growth plate closure supporting the incorporation theory. No trauma was reported

in our patient. No sign of fracture of the osteochondroma was found on plain radiographs and MRI. The limitation of our case report is due to the lack of histopathological diagnosis. However, osteochondroma is radiologically pathognomonic when there is a bony protuberance with trabecular continuity with the host bone on plain radiograph and cartilage cap on MRI.

Conclusion

Spontaneous regression of osteochondroma is a rare phenomenon, but regression can be anticipated in a growing child. Regular clinical and short-term imaging follow-up of the osteochondroma before skeletal maturation can be helpful in the treatment decision, as well as early detection of malignant transformation.

Conflict of interests

The authors declare that they have no conflict of interests.

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Authors' contributions

Conception and design: CKK. *Collection and assembly of data:* CKK, NFSNM. *Critical revision of the article for important intellectual content:* JH.

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