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CASE REPORT

Solitary osteochondroma: spontaneous regression

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Abstract Osteochondromas are the most common benign bone tumours. Nevertheless, their origin and biological behaviour are poorly understood. Rarely, spontaneous regression of osteochondromas may occur. We report the case of a 9-year-old girl with a solitary osteochondroma of the femur that regressed almost completely within 4 years, a fact that should be taken into account when deciding the management of these lesions, especially in young children.

Keywords Osteochondroma · Resolution · Radiographs · Child

Introduction

Osteochondromas are common lesions and may account for up to half of benign bone tumours in children [1]. Histologically, these lesions consist of a cartilage-capped bony outgrowth on the surface of the bone, generally located in the metaphyses of long bones. The vast majority (85%) of osteochondromas are solitary. Approximately 15% of osteochondromas are multiple in the context of hereditary osteochondromatosis, inherited in an autosomal-dominant manner [2].

Several cases of spontaneous regression of osteochondromas in the multiple osteochondromatosis variant were described in 1961 by Solomon [3]. However, spontaneous resolution of a solitary osteochondroma is rare.

Case report

We report the case of a 9-year-old girl with no history of trauma, who presented with an asymptomatic non-tender, non-mobile mass in the left popliteal fossa. Neurovascular symptoms were absent and function of the knee was preserved. Lateral and AP radiographs (Fig. 1) showed a posterior sessile lesion in the distal femur and a diagnosis of osteochondroma was made. As no radiological or clinical findings suggested malignancy, the girl was followed up and no treatment was given. Two years later, she remained asymptomatic. New radiographs taken at that time revealed a subtle reduction in the size of the lesion (Fig. 2). Four years post-diagnosis there is no clinical evidence of the mass and radiographs demonstrate a significant decrease in the size of the lesion, with only a small amount of residual posterior femoral cortical thickening (Fig. 3).

Discussion

Spontaneous resolution of a solitary osteochondroma is rare. In 1835, the first case of disappearing osteochondroma was described by Hunter [4]. Since then, a few spontaneously reducing osteochondromas have been reported. In 1998, Claikens et al. [5] reported a case of

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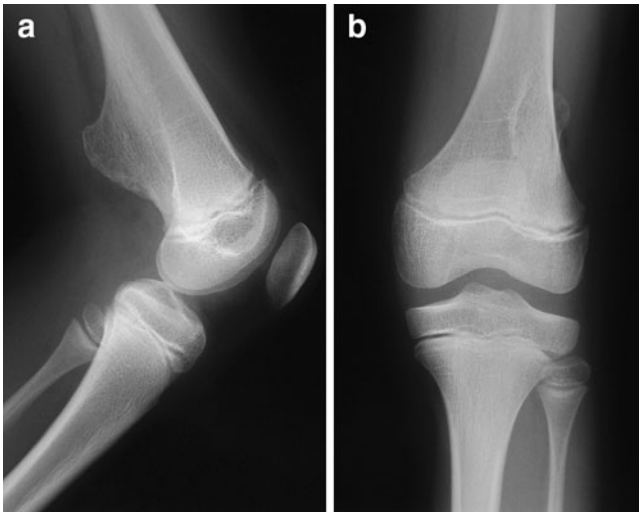

Fig. 1 **a** Lateral and (**b**) AP radiographs of the left knee show classic radiological findings of an osteochondroma

spontaneous resolution of a solitary osteochondroma and reviewed the nine previously published cases. They concluded that spontaneous regression is more common in sessile osteochondromas in boys ages 5–11 years. The

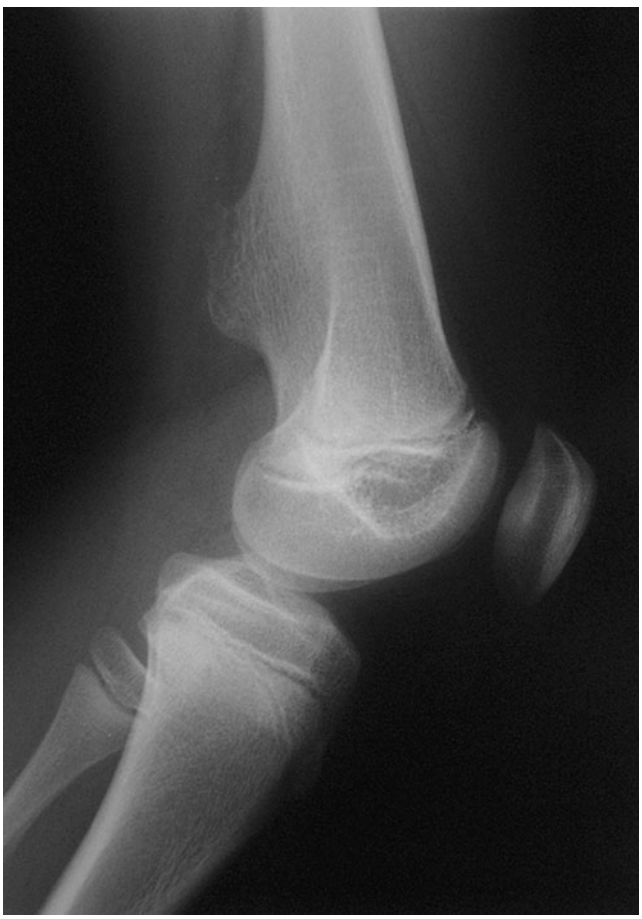

Fig. 2 Lateral radiograph of the same knee obtained 2 years after diagnosis. The girl was asymptomatic

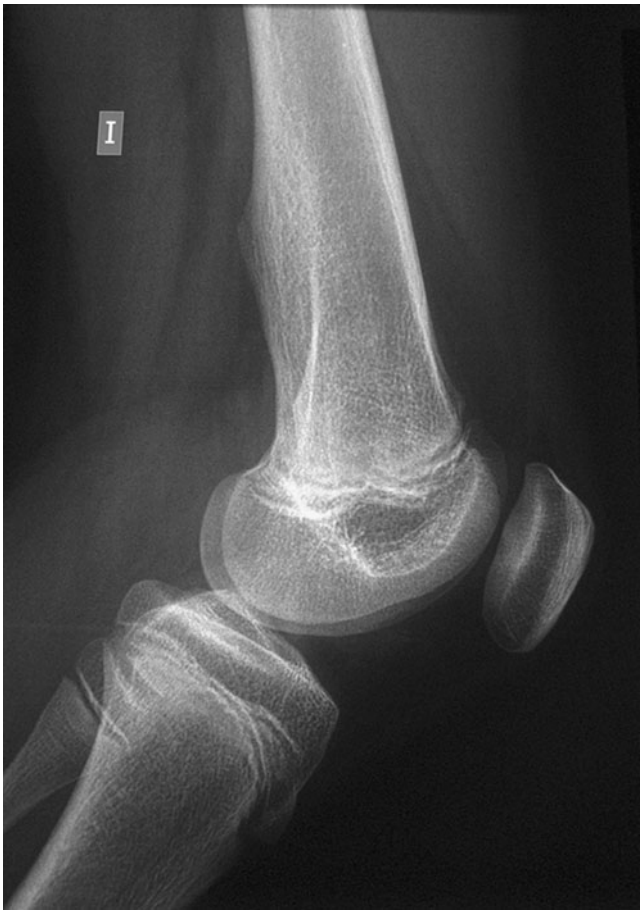

Fig. 3 Lateral radiograph of the same knee obtained 4 years after diagnosis shows resolution of the osteochondroma with residual posterior femoral cortical thickening

period of resolution varied from 1 year to 3 years in pedunculated lesions and from 6 months to 6 years in sessile osteochondromas.

The exact mechanisms of spontaneous resolution of osteochondromas remain unknown. Several reports suggest that bone tumours and tumour-like lesions may be expected to reduce before epiphyseal arrest of the host bone [6]. Based on this, there are two main hypotheses to explain the mechanism of osteochondroma regression. Some authors suggest that after tumour growth cessation, the osteochondroma is progressively incorporated into the cortex, whereas others propose that it is secondary to an active process of resorption and metaphyseal remodelling [5]. Some authors have also speculated on the role played by previous fractures in the mechanism of pedunculated osteochondroma regression, because of the increase in vascularity that occurs after a fracture and consequent stimulation of bone remodelling [7, 8].

Our patient was diagnosed with a sessile osteochondroma at the age of 9 years that, as with cases in the literature, regressed spontaneously before skeletal maturity was reached and without previous trauma. Currently at the

age of 13 years remodelling of the affected bone has not been radiographically confirmed, as described by others [8]. These results suggest that remodelling in this type of lesions takes a long time.

Although rare, some benign osteochondromas may disappear spontaneously, particularly in children, and this should be considered in the therapeutic management. Consequently, surgical treatment should be delayed in asymptomatic patients with solitary osteochondroma.

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