

Case Report

Primary aggressive chondroblastoma of the tibia: a case report and review of the literature

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Abstract

Chondroblastoma is a primary bone tumor in children, adolescents and young adults, which accounts for 1% of all bone tumors. Epiphyseal or epiphysometaphyseal localization, this lesion usually develops from secondary ossification centers close to the knee, shoulder and hip. Although chondroblastoma is a nonaggressive benign tumor, it can very rarely show a locally aggressive character or a malignant transformation or even metastases. We describe a histologically proven case of an aggressive, primary chondroblastoma of the tibia invading soft tissue in a 22-year-old girl.

Keywords

chondroblastoma; benign; aggressive; primary; metastases

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Background

Chondroblastoma is a very rare benign cartilage tumor. It affects the young male subjects between 10 and 20 years old, and sits in the epiphyseal area of the long bones (humerus, tibia and femur) [1]. Although chondroblastoma is a benign tumor, rarely it can invade adjacent structures or give metastases. 78 years since Jaffe and Lichtenstein used the term "benign chondroblastoma" to describe this "new" rare benign bone lesion which must be considered as a whole entity [2], there are very few cases with local aggressiveness published in Literature. The

majority of aggressive forms are recurrences. We report the case of a 22-year-old girl who had an aggressive primary chondroblastoma of the tibia.

1. Case presentation

This is a 22-year-old patient, with no medical history, whose case showed pain in the right knee for 12 months with an inflammatory appearance at first, partially relieved by analgesics. The evolution is marked by worsening pains of mixed appearance with swelling and stiffness of the knee. The clinical examination revealed a swelling of the knee, a



Figure 1. A profile knee X-ray showed a zone of oval epiphysometaphyseal osteolysis, with an extrasosseous component invading the posterior soft tissue.

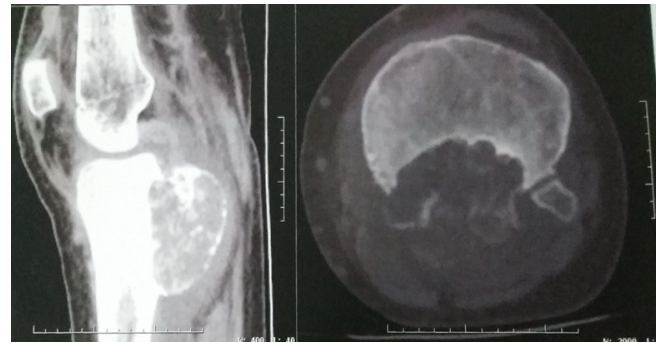


Figure 2. CT scan showed huge epiphysometaphyseal tumor with destruction of the posterior cortex and extrasosseous expansion.

reduction in joint amplitudes (flexion 0-40°) and a palpable, painful, hard, nonmobile posterior mass adhering to the posterior surface of the tibia. No lymphadenopathy, fever or weight loss was present. A face and profile knee X-ray showed a zone of oval epiphysometaphyseal osteolysis, with a fuzzy border with an extrasosseous component invading the posterior soft tissue, calcification was also noted within osteolysis (Fig. 1). The CT scan confirmed the huge epiphysometaphyseal tumor with destruction of the posterior cortex and extrasosseous expansion (Fig. 2). The MRI revealed a locally aggressive lesion measuring 5.5 cm × 3.6 cm × 4.8 cm, eccentric, epiphysometaphyseal invading the soft parts and repressing the vascular axes (Fig. 3). A biopsy was performed, where the diagnosis of chondroblastoma was retained after histopathological examination (Fig. 4).

The patient underwent posterior resection and curettage of the tumor (Fig. 5, 6). Six months later, the knee was mobile and painless. After an 18-month follow-up, there was no recurrence or metastasis or reduction in joint amplitudes on clinical and radiological examinations.



Figure 3. The MRI revealed a locally aggressive epiphysometaphyseal lesion invading the soft parts and repressing the vascular axes.

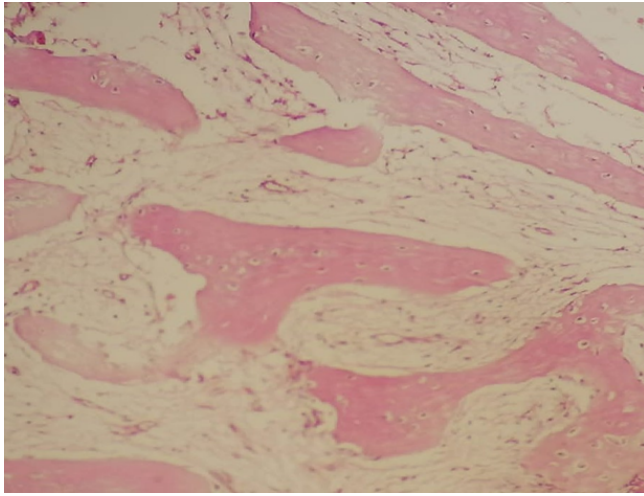


Figure 4. Monomorphous neoplastic proliferation of polygonal mononuclear cells with well-defined cytoplasmic borders. A fine network of pericellular calcification.

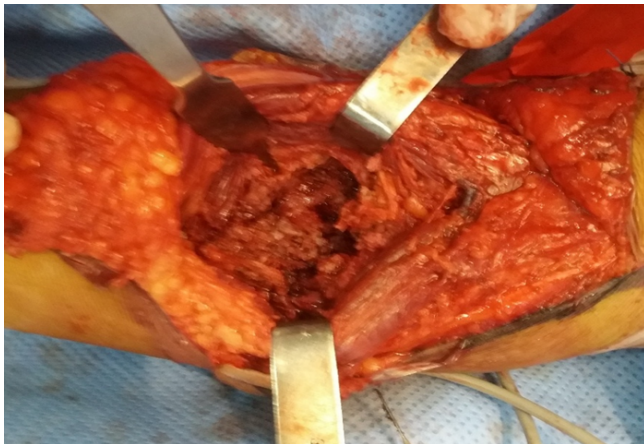


Figure 5. Intraoperative image showed resection and curettage of the tumor.

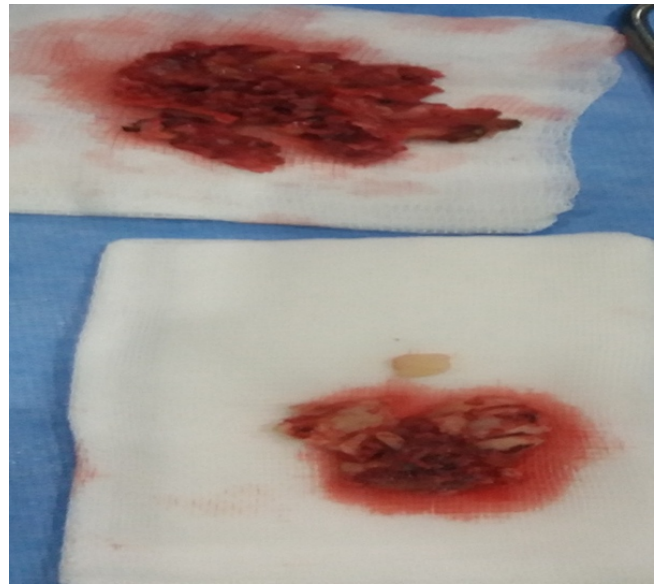


Figure 6. Curettage products.

2. Discussion

Chondroblastoma is a rare benign bone tumor representing approximately 1% of bone tumors [1]. It is often detected between 10 and 20 years of age [1], preferentially in boys. It predilectionally reaches the upper and lower extremities of the femur as well as the upper extremities of the humerus, tibia and tarsal bones [3]. Other locations have been described, particularly in older subjects: pelvis, ribs, scapula, metacarpus, spine [3].

The differential diagnosis of chondroblastoma arises especially in adults with clear cell chondrosarcoma, with a much more severe prognosis. The radiographic, CT and MRI aspects of these two lesions can be strictly identical and only histological analysis can distinguish them [4, 5]. And this is the case with our patient.

The therapeutic management of chondroblastoma is surgical in the vast majority of cases [6, 7, 8]. The gold standard in the surgical treatment of this benign lesion is complete and meticulous curettage, often associated with filling with an auto / allograft [8].

Although it is a benign tumor, a few cases of metastasis have been reported in the literature [9, 10]. In fact, the prognosis for chondroblastoma is mainly dominated by the risk of local recurrence

after curettage-grafting. This recidivism rate varies from 5 to 38% depending on the series [9, 11]. These recurrences are most of the time aggressive either by a tumor extension in the joint or in the adjacent soft parts [12, 13].

The notion of aggressiveness for chondroblastoma is linked, especially for recurrences or tumors with joint or soft tissue invasion, especially flat bones [14, 15]. Wright [16] and Erler [17] described primary, non-recurrent aggressive chondroblastomas of the epiphyses, proximal tibial and distal femoral. Harish [18] described another case of primary aggressive chondroblastoma of humeral location. Two other cases which were claimed to be aggressive chondroblastomas were later diagnosed as chondrosarcomas [19, 20]. According to our knowledge, our case would be qualified as the fifth case of primary, aggressive chondroblastoma in the English literature. These reported cases actually reflect the local aggressiveness inherent in chondroblastoma. We know that this lesion has a local growth potential which remains constant and the new WHO classification which appears in 2013 takes this characteristic into account since chondroblastoma was included in "benign tumors with local aggressiveness".

3. Conclusions

Chondroblastomas are benign lesions, but can be locally aggressive, even cases of metastasis have been documented. We report a fifth case of primary and aggressive chondroblastoma. There is no anatomopathological feature allowing to prejudge the aggressive nature of the tumor or the risk of recurrence. Early diagnosis and proper surgery can prevent recurrence.

Informed Consent

Written informed consent was obtained from the patient who participated in this case.

Conflict of Interest

None.

Financial Disclosure

None.

Acknowledgement

We want to acknowledge Madame SABRA BEZ-ZANIN for her helpful revision of the English language.

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Received: 2020-04-27

Revised: 2020-05-05

Accepted: 2020-05-12