



Review Article

Giant cell tumor locally advanced around the knee: treatment and literature review[☆]

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ABSTRACT

Giant cell tumor (GCT) is a benign bone tumor with aggressive characteristics. They are more prevalent in the third decade of life and demonstrate a preference for locating in the epiphyseal region of long bones. They have a high local recurrence rate, which depends on the type of treatment and initial tumor presentation. The risk of lung metastases is around 3%.

Between October 2010 and August 2014, nine patients diagnosed with locally advanced GCT or with pathological fracture to the knee level underwent surgical treatment. The aim of this study was to evaluate the results of the treatment, particularly with regard to relapse, and to conduct a literature review.

There was a predominance of males (77.7%). The most common location was the distal femur. Four patients (44%) developed local recurrence in the first year after surgery, three in distal femur and one in proximal tibia. Of the two patients with pathologic fracture at diagnosis, one of them presented recurrence after five months.

The treatment of GCT is still a challenge. The authors believe that the best treatment method is wide resection and reconstruction of bone defects with non-conventional endoprostheses. Patients should be aware and well informed about the possible complications and functional losses that may occur as a result of the surgical treatment chosen and the need for further surgery in the medium and long term.

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Tumor de células gigantes localmente avançado ao nível do joelho: tratamento e revisão da literatura

R E S U M O

Palavras-chave:

Tumores de células gigantes
Neoplasias ósseas
Articulação do joelho

O tumor de células gigantes (TCG) é um tumor ósseo benigno com características agressivas. São mais prevalentes na terceira e quarta décadas de vida e localizam-se preferencialmente na região epifisária dos ossos longos. Apresentam altas taxas de recorrência local, a qual depende do tipo de tratamento e da apresentação inicial do tumor. O risco de disseminação sistêmica (metástases pulmonares) gira em torno de 3%.

Entre outubro de 2010 e agosto de 2014, nove pacientes com diagnóstico de TCG localmente avançados ou com fratura patológica ao nível do joelho foram submetidos a tratamento cirúrgico. O objetivo deste estudo foi avaliar os resultados decorrentes do tratamento, especialmente com relação à recidiva, e fazer uma revisão da literatura.

Houve predominância do sexo masculino (77,7%). A localização mais comum foi o fêmur distal. Quatro pacientes (44%) apresentaram recidiva local no primeiro ano de pós-operatório, três do fêmur distal e um na tibia proximal. Dos três pacientes que apresentaram fratura patológica no momento do diagnóstico, um deles apresentou recidiva cinco meses após a cirurgia. O tratamento ainda é um grande desafio. Acreditamos que o melhor método de tratamento é a ressecção ampla com reconstrução da falha óssea com endoprótese não convencional. Os pacientes devem estar cientes e bem orientados quanto às possíveis complicações e prejuízos funcionais que podem ocorrer em decorrência do tratamento escolhido e quanto à necessidade de novas intervenções cirúrgicas em médio e longo prazo.

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Introduction

Giant cell tumor (GCT) is a benign bone tumor with aggressive characteristics. It represents approximately 5% of primary bone tumors and about 15% of benign bone tumors.¹

It consists of giant osteoclast-like cells interspersed with a hypercellular and vascularized stroma, which differentiates it from other tumor or pseudotumoral lesions, such as chondroblastoma, brown tumor of hyperparathyroidism, and aneurysmal bone cyst.²

It is more prevalent within the third and fourth decades of life, and is most commonly located in the epiphyseal region of the long bones. The most affected areas are the distal femur, proximal tibia, and distal radius.

Campanacci et al.³ classified GCTs into three types according to their biological behavior, radiographic appearance, and degree of bone destruction (Fig. 1). Type I are considered latent and are represented by small, intraosseous lesions. Type II are active and radiographically larger, but with intact periosteum. Type III are aggressive, extending throughout the periosteum and surrounding tissues.³⁻⁵

Surgical treatment is usually necessary. Surgery aims for complete tumor resection, preserving bone architecture and joint function, correction of the defect created with techniques such as autograft, homograft, arthrodesis, non-conventional endoprostheses, and filling with bone cement.⁶

Intralesional resection is usually the treatment of choice for Campanacci I and II tumors.¹ This should be accompanied by one or more local adjuvant methods (electrocautery, phenol, liquid nitrogen, argon plasma coagulation, etc.) in an attempt

to decrease the chance of recurrence.² Campanacci III tumors, due to their size and local aggressiveness, are usually best addressed through wide resection with defect correction.^{1,6}

They present high rates of local recurrence, which depends on the type of treatment and initial presentation of the tumor. The risk of systemic dissemination (lung metastasis) is approximately 3%.¹

This study assessed nine patients diagnosed with locally advanced GCT at the knee level and the outcome one year after surgery. The tumors classified as Campanacci III were included in this study, as well as cases of pathological fracture.

This study aimed to evaluate the results of the treatment of these patients, especially in relation to relapse, and to review the literature on the treatment of locally advanced GCT at the knee.

Methods

Between October 2010 and August 2014, nine patients diagnosed with locally advanced GCT at the knee (distal femur and proximal tibia) underwent surgical treatment. The diagnosis of the lesions without fracture was confirmed by percutaneous biopsy using a Jamshidi needle. In cases with pathological fracture, after local staging and surgery, the diagnosis was confirmed by histologic study.

The inclusion criteria were: patients diagnosed with Campanacci III GCT at the knee or who presented pathological fracture as a diagnosis. Predominant location was the distal femur, observed in 87.5% (seven patients), and the proximal tibia, in 13.5% (two patients).

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