Risk Factors for Local Recurrence after Intralesional Curettage for Giant Cell Tumors of Bone

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Introduction and Objectives
Intralesional treatment of giant cell tumors of bone (GCT) increases local recurrence rates compared with wide resection. However, the functional outcome after curettage is typically superior to wide resection and resection is usually reserved for recurrent disease or intra-articular pathological fractures. Adjuvant treatments such as PMMA have been proposed to reduce local recurrence rates. However, some surgeons believe that other factors are equally important. We aimed to determine if any patient demographics, tumor characteristics, or surgical/clinical parameters could be risk factors for local recurrence after intralesional treatment of GCT.

Materials and Methods
We retrospectively reviewed data from a national cohort of all patients with GCT of the appendicular skeleton (n=74, M/F: 37/37, median age 29 (12-68) years), treated with intralesional curettage between 1998 and 2013. The association of risk factors with local recurrence was analyzed using univariate and multivariate Cox regression and Kaplan-Meier survival analysis. (Risk factors: Age, gender, tumor grade and location, preoperative pathological fracture, histological diagnosis confirmed before final surgery, the use of PMMA, and treatment in (or outside) oncology center)

Results
The cumulative 4-year local recurrence rate was 37%. In the univariate analysis the only significant risk factor associated with local recurrence was “histological diagnosis confirmed before final surgery” (HR=0.45 CI: 0.21–0.98). In the multivariate analysis the only significant independent risk factors associated with local recurrence were “histological diagnosis confirmed before final surgery” (HR=0.30, CI: 0.10-0.90) and “treatment at an oncology center” (HR=0.29 CI: 0.08-0.99). There was no independent association between local recurrence rate and other parameters such as age, gender, tumor location and Campanacci grade, pathological fracture or the use of PMMA.

Conclusions
Our results suggest that confirmation of histological diagnosis before final surgery and referral to an orthopedic oncology center are important to avoid local recurrence of GCT. These findings support that surgery for GCT’s should be performed at a dedicated orthopedic oncology center, where biopsy typically is a part of the diagnostic routine. It seems that local adjuvant therapy with PMMA in itself is not a guarantee for a lower recurrence rate.

Keywords : Giant Cell Tumor, Curettage, Risk factors, Local Recurrence
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