

Clinical behaviour of parosteal osteosarcoma

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Abstract

Introduction: Parosteal osteosarcoma (POS) is a low-grade malignant bone tumour, representing 4-6% of all osteosarcomas and locates commonly posteriorly in distal femur. The aim of this single centre retrospective study was to evaluate clinical features and surgical outcomes of POS.

Methods: This retrospective study comprised 80 patients diagnosed with parosteal osteosarcoma (POS) identified from database at the Royal Orthopedic Hospital, Birmingham, UK between 1968 and 2014. 1782 cases of osteosarcoma were identified, with POS representing 4.5% of the total osteosarcoma burden. Patient survival was assessed using the Kaplan-Meier method using a log-rank test for univariate analysis whilst Cox regression analysis was used to identify independent factors affecting patient survival. Overall survival was calculated from the date of diagnosis at our hospital to most recent follow-up date or death.

Results: 64% were females and 36% males, mean age was 29.9 years and mean follow-up 11.2 years. All patients underwent surgery. Histological grading from surgical specimens was low-grade in 56.3%, intermediate in 28.8% and de-differentiated high grade in 15.0%. Surgical margins were wide in 41.3%, marginal in 46.3% and intralesional in 12.5%. Local recurrence developed in 17.3% cases. Surgical margin was a significant factor for local recurrence ($p < 0.000$). Overall survival was 91.8% at 5-years and 87.8% at 10-years. Local recurrence was a significant factor for overall survival ($p < 0.001$). 80% of the local recurrences occurred with de-differentiated high-grade histology.

Chemotherapy was given to 30 patients and only 16.7% had good response. 12 patients developed lung metastases and 6 of them had prior local recurrence. Intramedullary involvement did not have affect on local recurrence or survival.

Discussion: In conclusion, the main goal in treating POS must be to achieve a wide surgical margin, as inadequate margins are associated with local recurrence, even after long intervals. Local recurrence has a negative effect on survival, which may in part be due to de-differentiation at the time of recurrence. The role of chemotherapy in the treatment of POS is not as apparent as in the treatment of conventional OS and the mainstay of treatment should be considered surgical.