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Title: Prognostic Factors and Outcomes of Dedifferentiated Chondrosarcoma – A Single Institution Experience

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Introduction: Dedifferentiated chondrosarcoma is a rare primary malignant bone tumor with a universally poor prognosis. There are limited studies on survival, associated prognostic factors, as well as the role for adjuvant systemic therapy. The goal of our study is to analyze our experience of dedifferentiated chondrosarcoma to enhance the understanding of diagnosis, treatment, and outcomes.

Methods: A retrospective review was performed of fifty-one patients with dedifferentiated chondrosarcoma who presented to our institution between 1966 and 2014. Twenty-seven men and twenty-four females were included in the study with a mean age of sixty-two years. The diagnosis was confirmed histologically in all patients. Data on treatment and survival were obtained from review of the medical records. Survival analyses were performed using Kaplan-Meier and Log-Rank analyses.

Results: The most common sites were the femur (55%) and the pelvis (28%). In accordance with the Musculoskeletal Tumor Society classification, all patients presented either as Grade IIB (43) or Grade III (eight). Three patients underwent biopsy alone, seventeen patients had limb-sacrificing surgery, and thirty-one patients underwent limb-salvage surgery. The surgical margins were classified as intralesional (eight), marginal (fourteen), wide (twenty-six) and radical (four). Fifteen patients received adjuvant treatment, six patients received chemotherapy alone, seven patients received radiation therapy alone, and two patients had combined treatment. There was no significant difference in the use of chemotherapy ($p = 0.70$), surgical margins ($p = 0.81$) or tumor size ($p = 0.65$) on disease free survival. There was no effect of local recurrence on overall survival ($p = 0.33$) or decade of diagnosis on disease free survival ($p = 0.23$). Patients who presented as Grade III had a decreased median survival (5 months) as compared to Grade IIB disease (14 months) ($p = 0.01$). The median disease free survival was 8.6 months and the five-year disease-free survival was 15.7%.

Discussion and Conclusion: Advances in imaging, modern surgical technique, and adjuvant treatment have not altered the dismal prognosis of dedifferentiated chondrosarcoma. Despite local control, metastatic disease remains a treatment challenge for most patients and carries a poor overall survival.