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Surgical Tumor Resection in Combination with Pre-Operative Radiation for Treatment of Primary Sacral and Coccygeal Chordomas

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BACKGROUND:

A combination of pre-operative radiation and surgical resection has been proposed as an alternative to surgical resection alone to reduce the rate of tumor recurrence in spine chordoma patients. To evaluate the efficacy of this treatment regimen, we conducted a retrospective cohort study of the primary sacral and coccygeal chordoma patients, who were treated at the Massachusetts General Hospital during 1999-2011.

METHODS:

38 patients treated with pre-operative radiation (20-50 Gy) and surgery for primary sacral (34) or coccygeal (4) chordoma were followed for an average of 58 months. Patients were retrospectively assigned into two groups based on the status of surgical resection margin: negative or microscopically positive. Radiographic evidence was used to evaluate the local disease recurrence status and/or presence of metastatic disease. We used Kaplan-Meier survival analysis with LogRank significance test to analyze disease-free survival in each group. Stratified Cox model was used to look for significant confounders.

RESULTS:

There were 6 deaths recorded in the series (16%); 2 were attributable to disease, and 4 to other causes. The mean overall survival time was 75 months. The mean disease-free survival was 102 months. 6 patients in the series developed metastatic disease (16%). Of those, 2 died of disease and 4 were alive with disease at the time of last follow-up in 2012 (average follow-up time was 15 months). None of the 38 patients in the series had a local disease recurrence after en bloc resection. The final surgical pathology results were available for 35 of the 38 patients. Tumor resection margin was negative in 32 patients, with 6 metastases in this group. Margins were reported positive in 3 patients. The average follow-up time in the group with positive resection margins was 91 months (range 61-138 months), with no disease-specific deaths recorded during this time. Patient age at the time of surgery was found to be a statistically significant confounding variable, with advanced age corresponding to lower post-operative survival.

CONCLUSION:

Our results indicate that en bloc resection of the primary tumor in combination with pre-operative radiation was associated with good overall and disease-free survival, and no local recurrences.

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