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Outcome predictors for intracranial ependymoma radiosurgery.

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OBJECTIVE: To develop outcome predictors after stereotactic radiosurgery (SRS) in patients with intracranial ependymomas who had received previous fractionated radiation therapy, we compared tumor control, survival, and complications with tumor grade, volume, age of patients, and imaging characteristics. **METHODS:** We retrospectively reviewed records of 39 consecutive ependymoma patients who underwent SRS for 56 tumors. The median patient age was 22.8 years (range, 2.9-71.1 years). All patients had previous surgical resection of their ependymomas followed by radiotherapy, and 14 patients underwent previous chemotherapy. Twenty-five patients had low-grade ependymomas (34 tumors), and 14 patients had anaplastic ependymomas (22 tumors). The median radiosurgery target volume was 3.6 cm (range, 0.1-36.8 cm), and the median margin dose was 15.0 Gy (range, 10-22 Gy). **RESULTS:** At a median of 23.5 months after SRS (range, 6.1-155.2 months), 25 patients died as a result of metastases (12 patients) or disease progression (13 patients). The overall survival rates after SRS were 60.1, 36.1, and 32.1% at 1, 3, and 5 years, respectively. The progression-free survival rates after SRS at 1, 3, and 5 years were 81.6, 45.8, and 45.8%, respectively, for all grades of ependymomas. Lower histological tumor grade was not significantly associated with better progression-free survival ($P = 0.725$). Factors associated with an improved progression-free survival included smaller tumor volume and homogeneous tumor contrast enhancement in low-grade ependymomas. **CONCLUSION:** SRS provides another management option for patients with residual or recurrent ependymomas that have failed surgery and radiation therapy. Predictors of response include smaller volume and homogeneous contrast enhancement.

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