



Radiosurgery and stereotactic radiotherapy
for intracranial meningiomas

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ABSTRACT

The authors report the evolution of linear accelerator (LIN-AC)-based radiosurgery in the treatment of patients with intracranial meningiomas. They describe the technical aspects as well as clinical and radiological outcomes.

SUMMARY

The authors performed a retrospective review of 161 patients harboring 194 intracranial meningiomas treated with various types of stereotactic irradiation at their institution between May 1991 and July 2002. Clinical and radiological follow-up data (mean follow-up period 32.5 months, range 6-125 months) were obtained in 128 patients (79.5%) with 156 meningiomas (80.4%). There were 88 women and 40 men whose mean age was 57.2 years (range 18-87 years). Stereotactic irradiation was the primary treatment in 44 patients, and 84 patients underwent resection prior to radiosurgery. Stereotactic radiosurgery (SRS) was used to treat 79 lesions and fractionated stereotactic radiotherapy (SRT) was used to treat 77.

The mean dose for SRS was 1567 cGy (range 1200-2285 cGy) prescribed to a mean isodose line of 66.6% (range 50-90%). Stereotactic radiotherapy was delivered using a mean dose of 4839 cGy (range 2380-5400 cGy), prescribed to a mean isodose line of 89% (range 50-90%). The mean follow-up periods were 40 and 24 months in SRS- and SRT-treated patients, respectively. Tumor control was achieved in 58 SRT-treated benign meningiomas (90%) and in 70 SRT-treated lesions (97.2%). In patients with atypical meningiomas a considerably poorer prognosis was seen. Clinical improvement or stabilization of symptoms was observed in the majority of patients. Symptomatic complications were limited to four patients (5%) treated with SRS and four (5.2%) treated with SRT.

CONCLUSION

Stereotactic irradiation techniques have changed the neurosurgical approach to intracranial meningiomas. Either SRS or SRT delivered as a primary treatment in selected cases of skull base lesions or as an adjuvant after conservative resection has improved the management of these complex intracranial tumors.