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Outcomes of Stereotactic Radiosurgery and Hypofractionated Stereotactic Radiotherapy for Refractory Cushing's Disease

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Abstract

Objectives: Hypofractionated stereotactic radiotherapy (HSRT) for refractory Cushing's disease may offer a condensed treatment schedule for patients with large tumors abutting the optic chiasm unsuitable for stereotactic radiosurgery (SRS). To-date only four patients have been treated by HSRT in the published literature. We investigated the feasibility, toxicity, and efficacy of HSRT compared to SRS.

Methods: After approval, we retrospectively evaluated patients treated at our institution for refractory Cushing's disease with SRS or HSRT. Study outcomes included biochemical control, time to biochemical control, local control, and late complications. Binary logistic regression and Cox proportional hazards regression evaluated predictors of outcomes.

Results: Patients treated with SRS (n=9) and HSRT (n=9) were enrolled with median follow-up of 3.4 years. Clinicopathologic details were balanced between the cohorts. Local control was 100% in both cohorts. Time to biochemical control was 6.6. and 9.5 months in the SRS and HSRT cohorts, respectively (p=0.6258). Two patients in each cohort required salvage bilateral adrenalectomy. Late complications including secondary malignancy, radionecrosis, cranial nerve neuropathy, and optic pathway injury were minimal for either cohort.

Conclusions: HSRT is an appropriate treatment approach for refractory Cushing's disease, particularly for patients with large tumors abutting the optic apparatus. Prospective studies are needed to validate these findings and identify factors suggesting optimal fractionation approaches.

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