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Radiotherapy in Cushing's Disease

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Abstract

Objectives: To assess tumor growth control, biochemical response, factors affecting remission, and to identify possible complications in Cushing's Disease (CD) treated with radiotherapy (RT).

Methods: Forty-two patients who had undergone RT due to CD between 1996 and 2017 were included in the study. Hormonal remission after RT has been defined according to the clinical characteristics of the patients and results of the 24-hour urinary cortisol and 1 mg dexamethasone suppression tests. Tumor size control was defined as a stable or diminished tumor size in magnetic resonance imaging (MRI) during the follow-up. The statistical package for social sciences version 22.0 (SPSS 22.0) was used for statistical analyses.

Results: The median follow-up time after RT was 54.5 months. Gamma-knife, Cyberknife, conventional RT were performed in 73.8%; 16.7%; 9.5% of the patients, respectively. The mean RT dose was 25.7 Gy for Gamma-knife; 28 Gy for Cyberknife; 45 Gy for conventional RT. Hormonal remission rate was 54.8% and occured at a median of 13 (IQR: 3.7-27.7) months after RT. Tumor size control was obtained in all patients. Patients with high preoperative 24-hour urinary cortisol and 1 mg DST had biochemical remission in a longer time. Similarly, the remission rate was lower in those with high 24-hour urinary cortisol postoperatively, In 33,3% of the patients, a new hypophyseal deficiency developed within 10.5 (IQR: 3.0-19.7) months of RT. Meningioma was detected in one patient and cerebrovascular disease in 5 patients during the follow-up. None of the patients had cranial or optic nerve neuropathy.

Conclusion: Radiotherapy or radiosurgery is effective in maintaining tumor size and biochemical remission in CD. Delayed hypopituitarism is the most common complication. Long-term follow-up is necessary for both recurrence and possible complications.

Keywords: Cushing's disease, radiotherapy, radiosurgery

DOI: 10.25179/tjem.20182202-P072