

RADIOTHERAPY FOR INTRACRANIAL GERMINOMA: TREATMENT MODALITIES AND CLINICAL OUTCOME

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Purpose : We retrospectively analyzed the clinicopathologic features and treatment modalities, including radiotherapy (RT) alone and induction chemotherapy followed by RT (CRT), and the clinical outcomes of intracranial germinoma.

Methods and Materials : A total of 20 patients diagnosed with tissue-confirmed intracranial germinoma between 2006 and 2012 and available follow-up data were included in this study. Sixteen patients underwent CRT and 4 underwent RT alone. CRT involved one to five cycles of upfront chemotherapy followed by limited-field (whole ventricle plus primary tumor boost) or extended-field RT (craniospinal irradiation [CSI] followed by limited-field), for which the RT field and dose depended on the tumor location, response to chemotherapy, and metastatic status. Among them, 13 patients received limited or extended-field RT with 3-dimensional (3D) conformal radiotherapy (3D-CRT), and 7 patients received CSI accompanied by helical tomotherapy.

Results : This study consisted of 18 male and 2 female patients, with a median age of 14 years (7–29 y). After a median follow-up of 34 months, the 3-year disease-free survival rate and overall survival (OS) rate were 90% and 100%, respectively. For the RT alone group, the CSI was delivered with a tumor dose of 30.6 Gy in fractions of 1.8 Gy/d, whole-ventricle and neurohypophysis involved administering 30 Gy in fractions of 2 Gy/d if no CSI was used. Finally, the tumor was boosted to receive a total median dose of 50 Gy (46.5–50.4 Gy), whereas for the CRT group, the entire brain and/or spine received a median of 24 Gy (21.6–30.6 Gy) in fractions of 1.5–1.8 Gy/d, and the tumor was boosted to a total median dose of 45 Gy (24–50.4 Gy). No recurrences developed in patients treated using extended RT; however, 2 patients treated with CRT, but not with CSI, developed spinal relapse.

Conclusion : Our results indicate that induction chemotherapy accompanied by dose-reduced and volume-reduced RT resulted in effective disease control and prognosis for intracranial germinoma, including β -HCG secreting germinoma.

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Key words: Germinoma, Radiotherapy, Chemotherapy, Craniospinal irradiation,
Whole-ventricle