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The Influence of Pretreatment Characteristics and Radiotherapy Parameters on Time Interval to Development of Radiation-Associated Meningioma.

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PURPOSE: To identify pretreatment characteristics and radiotherapy parameters which may influence time interval to development of radiation-associated meningioma (RAM). **METHODS AND MATERIALS:** A Medline/PUBMED search of articles dealing with RAM yielded 66 studies between 1981 and 2006. Factors analyzed included patient age and gender, type of initial tumor treated, radiotherapy (RT) dose and volume, and time interval from RT to development of RAM. **RESULTS:** A total of 143 patients with a median age at RT of 12 years form the basis of this report. The most common initial tumors or conditions treated with RT were medulloblastoma (n = 27), pituitary adenoma (n = 20), acute lymphoblastic leukemia (n = 20), low-grade astrocytoma (n = 19), and tinea capitis (n = 14). In the 116 patients whose RT fields were known, 55 (47.4%) had a portion of the brain treated, whereas 32 (27.6%) and 29 (25.0%) had craniospinal and whole-brain fields. The median time from RT to develop a RAM or latent time (LT) was 19 years (range, 1-63 years). Male gender (p = 0.001), initial diagnosis of leukemia (p = 0.001), and use of whole brain or craniospinal field (p <= 0.0001) were associated with a shorter LT, whereas patients who received lower doses of RT had a longer LT (p < 0.0001). **CONCLUSIONS:** The latent time to develop a RAM was related to gender, initial tumor type, radiotherapy volume, and radiotherapy dose.

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