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Long-Term Results of Brachytherapy with Temporary Iodine-125 Seeds in Children with Low-Grade Gliomas.

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Abstract

PURPOSE: To retrospectively review the results of temporary I-125 brachytherapy in 94 children and adolescents with low-grade glioma. **METHODS AND MATERIALS:** Treatment was performed in progressive tumors roughly spherical in shape with a diameter of up to 5 cm, including 79 astrocytomas, 5 oligodendrogliomas, 4 oligoastrocytomas, 1 ependymoma, and 5 other tumors. Location was suprasellar/chiasmatal in 44, thalamic/basal ganglia in 18, hemispheric in 15, midbrain/pineal region in 13, and lower brainstem in 3. Initially, 8% of patients were free of symptoms, 47% were symptomatic but not disabled, and 30% were slightly, 6% moderately, and 3% severely disabled. **RESULTS:** 5- and 10-year survival was 97% and 92%. The response to I-125 brachytherapy over the long term was estimated after a median observation period of 38.4 (range, 6.4-171.0) months. At that time, 4 patients were in complete, 27 in partial, and 18 in objective remission; 15 showed stable and 30 progressive tumors. Treatment results did not correlate with age, sex, histology, tumor size, location, or demarcation of the tumor. Secondary treatment became necessary in 36 patients, including 19 who underwent repeated I-125 brachytherapy. At final follow-up, the number of symptom-free patients had risen to 21%. Thirty-eight percent showed symptoms without functional impairment, 19% were slightly and 11% moderately disabled, and only 4% were severely disabled. **CONCLUSIONS:** Response rates similar to those of conventional radiotherapy or chemotherapy can be anticipated with I-125 brachytherapy in tumors of the appropriate size and shape. We believe it to be a useful contribution to the treatment of low-grade gliomas in children. Copyright © 2010. Published by Elsevier Inc.

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