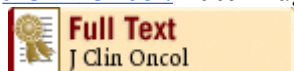




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1: [J Clin Oncol](#). 2009 Aug 1;27(22):3691-7. Epub 2009 Jul 6.



Late effects of conformal radiation therapy for pediatric patients with low-grade glioma: prospective evaluation of cognitive, endocrine, and hearing deficits.

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PURPOSE: We conducted a prospective trial to evaluate late effects in pediatric patients with low-grade glioma (LGG) treated with conformal radiation therapy (CRT). **PATIENTS AND METHODS:** Between August 1997 and August 2006, 78 pediatric patients with LGG (mean age, 9.7 years; standard deviation, +/-4.4 years) received 54 Gy of CRT with a 10-mm clinical target volume margin. Tumor locations were diencephalon (n = 58), cerebral hemisphere (n = 3), and cerebellum (n = 17). Baseline and serial evaluations were performed to identify deficits in cognition, endocrine function, and hearing. Deficits were correlated with clinical factors and radiation dose within specific normal tissue volumes. **RESULTS:** Cognitive effects of CRT through 5 years after CRT correlated with patient age, neurofibromatosis type 1 status, tumor location and volume, extent of resection, and radiation dose. The effect of age exceeded that of radiation dose; patients younger than 5 years experienced the greatest decline in cognition. Before CRT, growth hormone (GH) secretion abnormality was diagnosed in 24% of tested patients, and 12% had precocious puberty. The 10-year cumulative incidence of GH replacement was 48.9%; of thyroid hormone replacement, 64.0%; of glucocorticoid replacement, 19.2%; and of gonadotropin-releasing hormone analog therapy, 34.2%. The mean +/- standard errors of the cumulative incidence of hearing loss at 10 years did not exceed 5.7% +/- 3.3% at any frequency. **CONCLUSION:** To our knowledge, this is the largest series of prospectively followed children with LGG to undergo irradiation. Adverse effects are limited and predictable for most patients; however, this study provides additional evidence that CRT should be delayed for young patients and identifies the potential benefits of reducing radiation dose to normal brain.

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