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Evaluation of helical tomotherapy in the treatment of high-grade gliomas near critical structures

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ABSTRACT

Background. Our purpose was to investigate the role of helical tomotherapy using a simultaneous integrated boost technique for the treatment of high-grade gliomas near intracranial critical structures.

Methods and materials. Of 27 patients treated with helical tomotherapy, 11 were eligible. Only patients whose tumors were within 0.5 cm of the optic chiasm, the optic nerve or the brainstem were included. The therapeutic approach was a simultaneous integrated boost, prescribing 66 and 60 Gy to the PTV1 and PTV2, respectively, in 30 fractions. All patients received concomitant temozolomide at a dose of 75 mg/m^2 daily during radiation therapy.

Results. Of the 11 patients considered, 3 patients (27%) died after 4 months from the completion of the combined treatment. Three patients (27%) presented local progression, and the median time to disease progression was 6 months (range, 1-12). Five patients (45%), at the time of this evaluation, did not have signs or symptoms of recurrence or progression of the disease. Acute toxicity, evaluated during radiochemotherapy, was minimal, with all patients experiencing RTOG grade 0 and grade 1 toxicity.

Conclusions. Helical tomotherapy proved to be an effective and safe treatment modality, with an improvement of accuracy in delivery of highdose radiotherapy despite the presence of nearby critical structures.

Key words: critical structures, helical tomotherapy, high-grade gliomas.

The authors declare that they have no conflict of interest.

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