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Clinical results of helical tomotherapy for high-grade gliomas

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Abstract

Introduction: Radiotherapy-related damage of normal tissue inevitably influences the treatment outcomes in the context of high-grade gliomas (HGGs) treatment. We reported the survival outcomes and toxicities of patients with HGG treated with helical tomotherapy (HT) and the prognostic factors were analyzed.

Materials and methods: A total of 67 patients (29 had grade III and 38 had grade IV HGGs) who received HT between January 2016 and June 2020 were analyzed. Overall survival (OS) and progression-free survival (PFS) from the beginning of HT and OS from surgery were assessed, and toxicity and disease control were described briefly.

Results: For patients with grade III HGGs, median OS (mOS) and median PFS (mPFS) from the beginning of HT were 68.933 and 62.967 months, respectively. For patients with grade IV HGGs, mOS and mPFS from the beginning of HT were 19.667 and 7.23 months, respectively. No grade ≥ 3 acute or late nonhematologic toxicities were observed. Multivariable Cox regression analysis showed that methylguanine methyltransferase (MGMT) methylated status, age, number of lesions, WHO grade, and monocyte count for PFS were significant. Age, monocyte count, and isocitrate dehydrogenase (IDH) status for OS.

Conclusion: Treatment of HGGs with HT appears to be potentially effective and safe. HT is promising for glioblastomas (GBM), especially complex cases with infratentorial involvement or multiple lesions. This study highlighted the potential clinical significance of systemic inflammation indicators in predicting survival and disease progression.

Keywords: High-grade glioma; helical tomotherapy; survival; temozolomide; toxicity.

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