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Patterns of care and survival in patients with multifocal glioblastoma: A Danish cohort study

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Abstract

Background: This Danish cohort study aims to (1) compare patterns of care (POC) and survival of patients with multifocal glioblastoma (mGBM) to those with unifocal glioblastoma (uGBM), and (2) explore the association of patient-related factors with treatment assignment and prognosis, respectively, in the subgroup of mGBM patients.

Methods: Data on all adults with newly diagnosed, pathology-confirmed GBM between 2015 and 2019 were extracted from the Danish Neuro-Oncology Registry. To compare POC and survival of mGBM to uGBM, we applied multivariable logistic and Cox regression analysis, respectively. To analyze the association of patient-related factors with treatment assignment and prognosis, we established multivariable logistic and Cox regression models, respectively.

Results: In this cohort of 1343 patients, 231 had mGBM. Of those, 42% underwent tumor resection and 41% were assigned to long-course chemoradiotherapy. Compared to uGBM, mGBM patients less often underwent a partial (odds ratio [OR] 0.4, 95% confidence interval [CI] 0.2-0.6), near-total (OR 0.1, 95% CI 0.07-0.2), and complete resection (OR 0.1, 95% CI 0.07-0.2) versus biopsy. mGBM patients were furthermore less often assigned to long-course chemoradiotherapy (OR 0.6, 95% CI 0.4-0.97). Median overall survival was 7.0 (95% CI 5.7-8.3) months for mGBM patients, and multifocality was an independent poor prognostic factor for survival (hazard ratio 1.3, 95% CI 1.1-1.5). In mGBM patients, initial performance, O[6]-methylguanine-DNA methyltransferase promotor methylation status, and extent of resection were significantly associated with survival.

Conclusions: Patients with mGBM were treated with an overall less intensive approach. Multifocality was a poor prognostic factor for survival with a moderate effect. Prognostic factors for patients with mGBM were identified.

Keywords: crossing midline; glioblastoma; multifocal; patterns of care; survival.

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