Survival and functional status after resection of recurrent glioblastoma multiforme.

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Abstract

OBJECTIVE: To determine the selection factors for and results of second resections performed to treat recurrent glioblastoma multiforme (GM), we studied 301 patients with GM who were treated from the time of diagnosis using two prospective clinical protocols.

METHODS: The patients were prospectively followed from the time of diagnosis, using clinical and radiographic criteria after maximal surgical resection and external beam radiotherapy with or without adjuvant chemotherapy. Resection of recurrent GM was performed at the recommendation of the treating clinicians. The results of the second resections were retrospectively reviewed and analyzed using multivariate logistic regression, Kaplan-Meier-Turnbull survival analysis, Cox regression, and propensity score stratification.

RESULTS: Forty-six patients underwent second resections during the study period. The actuarial rate of the second resections was 15% of the patients 1 year after diagnosis and 31% 2 years after diagnosis. Younger age (P = 0.01) and more extensive initial resection (P = 0.02), but not Karnofsky Performance Scale (KPS) score at the time of diagnosis or recurrence, predicted a higher chance of selection for reoperation after initial tumor recurrence. Twenty-eight percent of the patients had improved KPS scores after undergoing reoperation, 49% were stable, and 23% had declines in KPS scores of 10 to 30 points. There was no operative mortality. After reoperation, 85% of the patients received chemotherapy, 11% received brachytherapy or underwent stereotactic radiosurgery, and 17% underwent third resections. The median survival period after reoperation was 36 weeks. Higher preoperative KPS scores predicted longer survival periods after reoperation (P = 0.03). Age and interval since diagnosis were not significant prognostic factors. The median high-quality survival period (KPS score, > or =70) was 18 weeks. The median survival period after first tumor progression was 23 weeks for 130 patients treated using the same protocols who did not undergo reoperations. Patients who did undergo reoperations experienced clinically and statistically significantly longer survival periods. However, this was determined to be partially because of selection bias.

CONCLUSION: Survival after resection of recurrent GM remains poor despite advances in imaging, operative technique, and adjuvant therapies. High-quality survival after resection of recurrence to treat GM seems to have increased significantly since an earlier report from our institution.

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