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Patterns of progression in patients with recurrent glioblastoma treated with bevacizumab.

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Abstract

OBJECTIVE: We evaluated patterns of tumor progression in patients with recurrent glioblastoma who were treated with bevacizumab (BEV) alone or in combination with irinotecan (CPT-11) while participating in the BRAIN study.

METHODS: An independent neuroradiologist reviewed MRI scans at baseline and progression in patients who received BEV (n = 85) or BEV+CPT-11 (n = 82) while on BRAIN. Tumor patterns were scored as local, distant, diffuse, or multifocal. Median progression-free survival (PFS) and overall survival (OS) were estimated using Kaplan-Meier methods. Hazard ratios for PFS and OS were estimated using a Cox regression model.

RESULTS: Twenty-eight percent of patients who participated in BRAIN had nonlocal disease at baseline (72% local disease). Sixty-seven (79%) patients treated with single-agent BEV and 57 (70%) patients treated with BEV+CPT-11 experienced disease progression while on BRAIN. Most patients in each treatment group did not have a change in the radiographic pattern of their tumor (i.e., "no shift") at the time of progression. The proportion of BEV patients with no shift (82%) was greater than that of BEV+CPT-11 patients (53%, $\chi(2)$ p = 0.0004), and a greater proportion of BEV+CPT-11 patients (39%) compared with BEV patients (16%) experienced local-to-diffuse tumor pattern at progression ($\chi(2)$ p = 0.002). Patients treated with BEV or BEV+CPT-11 who had local-to-local or local-to-diffuse progression patterns had similar efficacy outcomes, including objective response, PFS, and OS.

CONCLUSIONS: Most patients treated with BEV or BEV+CPT-11 on BRAIN did not experience a change from baseline in radiographic characteristics of disease at the time of progression.

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