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Loss of Heterozygosity 1p36 and 19q13 Is a Prognostic Factor for Overall Survival in Patients With Diffuse WHO Grade 2 Gliomas Treated Without Chemotherapy

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Purpose: This study was conducted to elucidate the impact of loss of heterozygosity (LOH) for chromosomes 1p36 and 19q13 on the overall survival of patients with diffusely infiltrating WHO grade 2 gliomas treated without chemotherapy.

Patients and Methods: We assessed the LOH status of tumors from patients harboring WHO grade 2 gliomas diagnosed between 1991 and 2000. Patients were either followed after initial biopsy or treated by surgery and/or radiation therapy (RT). Overall survival, time to malignant transformation, and progression-free survival were last updated as of March 2005.

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Results: Of a total of 79 patients, LOH 1p36 and LOH 19q13 could be assessed in 67 and 66 patients, respectively. The median follow-up after diagnosis was 6 years. Loss of either 1p or 19q, in particular codeletion(s) at both loci, was found to positively impact on both overall survival (log-rank $P < .01$), progression-free survival, and survival without malignant transformation ($P < .05$). Tumor volume ($P < .0001$), neurologic deficits at diagnosis ($P < .01$), involvement of more than one lobe ($P < .01$), and absence of an oligodendroglial component ($P < .05$) were also predictors of shorter overall survival. The extent of surgery was similar in patients with or without LOH 1p and/or 19q; RT was more frequently resorted to for patients without than for patients with LOH 1p/19q (30% v 60%).

Conclusion: The presence of LOH on either 1p36 or 19q13, and in particular codeletion of both loci is a strong, nontreatment-related, prognostic factor for overall survival in patients with diffusely infiltrating WHO grade 2 gliomas.

