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Chromosome 1p and 19q Deletions in Glioblastoma Multiforme.

[Kaneshiro D](#), [Kobayashi T](#), [Chao ST](#), [Suh J](#), [Prayson RA](#).

Departments of *Radiation Oncology daggerAnatomic Pathology, Cleveland Clinic Foundation, Cleveland OH.

CONTEXT: Deletions on chromosomes 1p and 19q have been shown to correlate with prognosis and chemosensitivity in anaplastic oligodendrogliomas. In glioblastoma multiforme (GBM), the impact on prognosis of these alterations in GBM is unclear. OBJECTIVE: The purpose of this study was to identify patients with GBM who had evidence of 1p or 19q deletions by fluorescence in situ hybridization, and correlate these results with clinical findings and survival. DESIGN: Three hundred thirty-seven GBM resected between 2001 and 2006 were evaluated using fluorescence in situ hybridization to identify deletions on chromosomes 1p and 19q. Cox regression was used to compare survival between these 2 groups and a control group of 1p and 19q intact tumors. RESULT: Seventeen (5.1%) patients (9 males; mean age at diagnosis=61 y, range: 35 to 84 y) were found to have 1p deletions; 8 patients (47.1%) received chemotherapy and 13 patients received radiation therapy. The mean survival for this group was 10.8 months (range: 1 to 50 mo). Eighteen (5.3%) patients (11 females; mean=56 y, range: 25 to 76 y) had 19q deletions; 9 patients (50%) received chemotherapy and 8 patients were known to have had radiation therapy. The mean survival of this group was 8.4 months (range: 1 to 17 mo). A control group of 20 patients (13 males; mean=60 y, range: 40 to 80 y) was selected, 8 patients (40%) of who received chemotherapy and 12 patients were known to have had radiation therapy. The mean survival in this group was found to be 16.4 months (1 to 59 mo). Nine (3.7%) tumors had codeletions of 1p and 19q and were not evaluated in this study. Isolated 1p and 19q deletions did not significantly correlate with survival. Adjusting for sex, age, and chemotherapy, the 19q-deleted group had a significantly lower survival (hazard ratio =2.8, P=0.025) than the other groups. CONCLUSIONS: The incidence of isolated 1p or 19q deletions among GBM in the current study was 6.2% and 5.3%, respectively. In contrast to anaplastic oligodendrogliomas, 1p and 19q deletions alone were not found to improve survival of patients with GBM; however, when adjusted for age, sex, and chemotherapy, 19q deletions seem to negatively impact survival.

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