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Loss of heterozygosity on chromosome 10q in glioblastomas, and its association with other genetic alterations and survival in Indian patients

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Background: Glioblastoma multiforme (GBM) is the most common malignant central nervous system neoplasm. Loss of heterozygosity (LOH) on chromosome 10q in these tumors has been found to show variable association with prognosis. **Aim:** To evaluate LOH 10q status in cases of GBM, and to correlate these results with patient characteristics, other genetic alterations, and survival. **Material and Methods:** Fresh tumor tissue and blood samples were obtained for 25 cases of GBM diagnosed over a 2-year period. LOH 10q assay was performed on blood and tumor DNA by a PCR-based method using four microsatellite markers. TP53 mutation analysis and fluorescence in situ hybridization for epidermal growth factor receptor (EGFR) were performed. Histopathology was reviewed and clinical data were analyzed. **Results:** LOH 10q was identified in 17 of 25 cases (68%). Losses were frequent with markers D10S1765 (12/20 informative cases; 60%) and D10S587 (12/17 informative cases; 70.5%) in the regions of 10q23.3 and 10q26.1, respectively. D10S540 for 10q25.1 showed LOH in 4/12 informative cases (33.3%) and D10S1770 for 10q26-ter in none of the 25 cases. LOH with D10S1765 at the PTEN gene locus was found to correlate with overall LOH 10q status ($P = 0.001$). LOH 10q was more common in patients older than 40 years (16/19, 84.2%) than in those below (1/6, 16.7%) ($P = 0.006$). One of three pediatric patients included demonstrated LOH 10q. Survival rates for patients with LOH were lower than for patients with retained heterozygosity. **Conclusion:** LOH 10q is a frequent genetic abnormality in GBM in Indian patients, is seen more frequently in older adults, and its presence is associated with shorter survival. The single best marker to determine LOH 10q status is D10S1765 at the PTEN region.

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