Glioblastoma with an oligodendroglioma component: distinct clinical behavior, genetic alterations, and outcome.


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Abstract
Glioblastomas (GBMs) containing foci that resemble oligodendroglioma are defined as GBM with oligodendroglioma component (GBMO). However, whether GBMO is a distinct clinicopathological variant of GBM or merely represents a divergent pattern of differentiation remains controversial. We investigated 219 consecutive primary GBMs, of which 40 (18.3%) were confirmed as GBMOs. The clinical features and genetic profiles of the GBMOs were analyzed and compared with the conventional GBMs. The GBMO group showed more frequent tumor-related seizures (P=.027), higher frequency of IDH1 mutation (31% vs. <5%, P=.015), lower MGMT expression (P=.016), and longer survival (19.0 vs. 13.2 months; P=.022). In multivariate Cox regression analyses, presence of an oligodendroglioma component was predictive of longer survival (P=.001), but the extent of the oligodendrogial component appeared not to be linked to prognosis (P=.664). The codeletions of 1p/19q, somewhat surprisingly, were infrequent (<5%) in both GBMO and conventional GBM. In addition, the response to aggressive therapy differed: the GBMO group had no survival advantage associated with aggressive treatment protocols, whereas a clear treatment effect was observed in the conventional GBM group. Collectively, the clinical behavior and genetic alterations of GBMO thus differs from those of conventional GBM. Presence of an oligodendrogial component may therefore be a useful classification and stratification variable in therapeutic trials of GBMs.

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