Genetic Analysis of a Case of Glioblastoma with Oligodendroglial Component Arising During the Progression of Diffuse Astrocytoma.


Abstract
The most recent definition of glioblastoma with oligodendroglioma component (GBMO) assigned clinical significance to the observation of oligodendroglial foci within glioblastomas. However, the pathological mechanism of its histogenesis has not yet been determined. We report the genetic analysis of a GBMO case that evolved from an astrocyte lineage. A 37-year-old male underwent a third craniotomy for the removal of recurrent lesions of a secondary glioblastoma originating from a previous diffuse astrocytoma. The lesion in the right frontal lobe contained oligodendroglial foci within a glioblastoma background, while the remaining lesions showed only classic glioblastoma histology. Genetic analyses revealed distal 10q loss of heterozygosity (LOH) occurring de novo in the oligodendroglial tissue, as well as 10p, 17p LOH, and isocitrate dehydrogenase-1 gene (IDH1) mutations inherited from the previous lesions. The final recurrent glioblastoma underwent LOH on almost the entire of chromosome 10. Based on these results, the importance of an oligodendroglial component in glioblastomas may be limited.

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