Histological spectrum of oligodendroglial tumors: Only a subset shows 1p/19q codeletion.


Abstract

BACKGROUND: Canonical oligodendroglial tumors (ODGs) are characterized genetically by chromosomes 1p/19q codeletion.

AIMS: This study was essentially aimed at the detection of frequency of 1p/19q codeletion in the different histological spectrum of ODG tumors in a large cohort of Indian patients.

MATERIALS AND METHODS: All the ODG tumors evaluated for 1p/19q by fluorescence in-situ hybridization (FISH) during 2009-2015 were correlated with histology, immunohistochemical expression for p53 protein and clinical features.

RESULTS: A total of 676 cases included both pediatric (n = 18) and adult (n = 658) patients. Histologically, 346 pure ODGs [oligodendroglioma (OD) and anaplastic oligodendroglioma (AOD)] and 330 mixed ODGs [oligoastrocytomas (OA), anaplastic oligoastrocytomas (AOA) and glioblastoma with oligodendroglioma component (GBM-O)] were included. 1p/19q co-deletion was noted in 69% (60/87), 55.9% (145/259), 18.2% (18/99), 10.5% (18/172), and in 5.1% (3/59) cases of OD, AOD, OA, AOA, and GBM-O, respectively. In the pediatric age-group, 1p/19q codeletion was seen in 25% (2/8) of pure ODGs and in 10% (1/10) of mixed ODGs. In adults, it was observed in 60% (203/338) cases of pure ODGs and in 11.9% (38/320) cases of mixed ODGs. In adults, pure ODG histology (P = 0.00), frontal location (P = 0.004), calcification [in pure ODGs] (P = 0.03), and lack of p53 protein overexpression (P = 0.00) showed significant statistical correlation with 1p/19q codeletion.

CONCLUSIONS: This study is unique in being one of the largest on ODGs for 1p/19q co-deletion including both pediatric and adult age groups of Indian patients. The results showed co-deletion in 60% of adult ODGs and 25% of pediatric pure ODGs. This reemphasizes the occurrence of 1p/19q codeletion, even though rare, in the pediatric age group.

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