Lower-Grade Gliomas With Molecular Features Of Glioblastoma Have Distinct Tumor Characteristics and Better Survival Than WHO-Grade IV Counterparts.

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Introduction

A significant proportion of lower-grade gliomas harbour genetic alterations typical of GBM and poor prognosis. These tumors are defined as “diffuse astrocytic glioma, IDH-wildtype, with molecular features of glioblastoma, WHO grade IV”.

Hereby we present an analysis of our institutional cohort of 176 IDH-wt diffuse gliomas with TERT mutation, which is one of the typical molecular markers of GBM.
Materials and methods

• 176 adult hemispheric diffuse-gliomas (IDH1/2-wt; TERTp-mut) were retrospectively analyzed.

• 150 (85%), 19(11%) and 7(4%) patients were WHO grade IV, III and II respectively.

• Median follow-up was 15mo (1-92).

• Different WHO-grades were compared for age, gender, multifocality, gliomatosis pattern, Ki-67 index, MGMT-methylation, TERT-mutation site and survival.
Results-1

• Lower-grade tumors made up 15%.
• Different grades presented at comparable ages.
• Different grades had comparable MGMT methylation

(ANOVA, p=0.668152)
Results -2

Proliferative index was significantly higher in higher histopathological grades

C228T mutation was more common in WHO-grade IV compared to lower-grade (50% vs 73%, Chi sq 0.020686).
Results -3

Gliomatosis pattern was more common in lower-grades (3/26; 12%) vs. (1/150; 1%)
(chi-sq, p=0)

Multifocality was significantly more common in lower-grades (4/26; 15.4%) than in WHO-grade IV (3/150; 2%).
(chi-sq, p=0.001264)
Both RFS and OS were significantly better for lower grades.
Various studies have shown that astrocytomas with molecular features of glioblastoma have poor survival. This emphasizes the importance of recognizing these cases.

Despite the poor outcome of (IDH-wt, TERT-mut astrocytomas) group as a whole, we observed survival difference at different histopathological grades.
Summary Points

Our findings indicate that although (IDH-wt, TERT-mut Astrocytomas) are classified as WHO grade IV, the histopathological grade still carries prognostic information.