ABSTRACT

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The survival outcomes of molecular glioblastoma IDH-wildtype: a multicenter study.

Ramos-Fresnedo A(1), Pullen MW(1), Perez-Vega C(1), Domingo RA(1), Akinduro OO(1), Almeida JP(1), Suarez-Meade P(1), Marenco-Hillembrand L(1), Jentoft ME(2), Bendok BR(3), Trifiletti DM(4), Chaichana KL(1), Porter AB(5), Quiñones-Hinojosa A(1), Burns TC(6), Kizilbash SH(7), Middlebrooks EH(8), Sherman WJ(9).

Author information:
(1)Department of Neurosurgery, Mayo Clinic, Jacksonville, FL, USA.
(2)Department of Laboratory Medicine and Pathology, Mayo Clinic, Jacksonville, FL, USA.
(3)Department of Neurosurgery, Mayo Clinic, Phoenix, AZ, USA.
(4)Department of Radiation Oncology, Mayo Clinic, Jacksonville, FL, USA.
(5)Department of Neurology, Mayo Clinic, Phoenix, AZ, USA.
(6)Department of Neurosurgery, Mayo Clinic, Rochester, MN, USA.
(7)Department of Oncology, Mayo Clinic, Rochester, MN, USA.
(8)Department of Radiology, Mayo Clinic, Jacksonville, FL, USA.
(9)Division Chair, Neuro-Oncology, Department of Neurology, Mayo Clinic, 4500 San Pablo Rd. S, Jacksonville, FL, 32224, USA. Sherman.wendy@mayo.edu.

PURPOSE: Histological diagnosis of glioblastoma (GBM) was determined by the presence of necrosis or microvascular proliferation (histGBM). The 2021 WHO classification now considers IDH-wildtype diffuse astrocytic tumors without the histological features of glioblastoma (that would have otherwise been classified as grade 2 or 3) as molecular GBM (molGBM, WHO grade 4) if they harbor any of the following molecular abnormalities: TERT promoter mutation, EGFR amplification, or chromosomal + 7/- 10 copy changes. The objective of this study was to explore and compare the survival outcomes between histGBM and molGBM.

METHODS: Medical records for patients diagnosed with GBM at the three tertiary care academic centers of our institution from November 2017 to October 2021. Only patients who underwent adjuvant chemoradiation were included. Patients without molecular feature testing or with an IDH mutation were excluded. Univariable and multivariable analyses were performed to evaluate progression-free (PFS) and overall- survival (OS).

RESULTS: 708 consecutive patients were included; 643 with histGBM and 65 with molGBM. Median PFS was 8 months (histGBM) and 13 months (molGBM) ($p = 0.0237$) and median OS was 21 months (histGBM) versus 26 months (molGBM) ($p = 0.435$). Multivariable analysis on the molGBM sub-group showed a worse PFS if there was contrast enhancement on MRI (HR 6.224 [CI 95% 2.187-17.714], $p < 0.001$) and a superior PFS on patients with MGMT methylation (HR 0.026 [CI 95% 0.065-0.655], $p = 0.007$).

CONCLUSIONS: molGBM has a similar OS but significantly longer PFS when compared to histGBM. The presence of contrast enhancement and MGMT methylation seem to affect the clinical behavior of this subset of tumors.

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