ABSTRACT

J Neurooncol. 2022 Aug 21. doi: 10.1007/s11060-022-04114-4. Online ahead of print.

Sex as a prognostic factor in adult-type diffuse gliomas: an integrated clinical and molecular analysis according to the 2021 WHO classification.

Kim M(1), Kim S(2), Park YW(3), Han K(1), Ahn SS(1), Moon JH(4), Kim EH(4), Kim J(1), Kang SG(4), Chang JH(4), Kim SH(5), Lee SK(1).

Author information:
(1)Department of Radiology and Research Institute of Radiological Science and Center for Clinical Imaging Data Science, Yonsei University College of Medicine, 50-1 Yonsei-ro, Seodaemun-gu, Seoul, 120-752, Korea.
(2)Department of Statistics and Data Science, Yonsei University, Seoul, Korea.
(3)Department of Radiology and Research Institute of Radiological Science and Center for Clinical Imaging Data Science, Yonsei University College of Medicine, 50-1 Yonsei-ro, Seodaemun-gu, Seoul, 120-752, Korea. yaewonpark@yuhs.ac.
(4)Department of Neurosurgery, Yonsei University College of Medicine, Seoul, Korea.
(5)Department of Pathology, Yonsei University College of Medicine, Seoul, Korea.

PURPOSE: To investigate whether type-specific sex differences in survival exist independently of clinical and molecular factors in adult-type diffuse gliomas according to the 2021 World Health Organization (WHO) classification.

METHODS: A retrospective chart and imaging review of 1325 patients (mean age, 54 ± 15 years; 569 females) with adult-type diffuse gliomas (oligodendroglioma, IDH-mutant, and 1p/19q-codeleted, n = 183; astrocytoma, IDH-mutant, n = 211; glioblastoma, IDH-wildtype, n = 800; IDH-wildtype diffuse glioma, NOS, n = 131) was performed. The demographic information, extent of resection, imaging data, and molecular data including O6-methylguanine-methyltransferase promoter methylation (MGMT) promotor methylation were collected. Sex differences in survival were analyzed using Cox analysis.

RESULTS: In patients with glioblastoma, IDH-wildtype, female sex remained as an independent predictor of better overall survival (hazard ratio = 0.91, P = 0.031), along with age, histological grade 4, MGMT promoter methylation status, and gross total resection. Female sex showed a higher prevalence of MGMT promoter methylation (40.2% vs 32.0%, P = 0.017) but there was no interaction effect between female sex and MGMT promoter methylation status (P-interaction = 0.194), indicating independent role of female sex. The median OS for females were 19.2 months (12.3-35.0) and 16.2 months (10.5-30.6) for males. No sex difference in survival was seen in other types of adult-type diffuse gliomas.

CONCLUSION: There was a female survival advantage in glioblastoma, IDH-wildtype, independently of clinical data or MGMT promoter methylation status. There was no sex difference in survival in other types of adult-type diffuse gliomas, suggesting type-specific sex effects solely in glioblastoma, IDH-wildtype.

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DOI: 10.1007/s11060-022-04114-4
PMID: 35988090