Glioblastoma in young adult patients: contemporary patterns of care and survival in the United States

Research Published: 15 July 2025

(2025) Cite this article

Journal of Neuro-Oncology

Aims and scope

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Ory Haisraely, Srivatsa Vedala, Areeba Al-Sharfeen, Gohar S. Manzar, Subha Perni, Martin C. Tom, Thomas H. Beckham, Chenyang Wang, Debra N. Yeboa, Caroline Chung, Mary Frances McAleer, Amol J. Ghia, Chibawanye I. Ene, Shiao-Pei Weathers, Susan L. McGovern, Christine F. Wogan, Michael Roth, Jing Li & Brian De

Abstract

Purpose

Glioblastoma (GBM) is a highly aggressive brain tumor with poor outcomes, most commonly affecting older adults. Young adults (YA; ages 18–39), though less frequently affected, demonstrate distinct clinical and biological characteristics that may influence treatment response and survival. This study aimed to evaluate treatment patterns and outcomes in YA GBM relative to older adults in a national dataset.

Methods

This retrospective cohort analysis of the National Cancer Database (NCDB) from 2004 to 2021 identified GBM patients aged 18 years and older. Baseline demographics, tumor characteristics, and treatment patterns were compared between YAs and patients aged ≥ 40 years. Survival analysis was limited to isocitrate dehydrogenase (IDH)-wildtype GBM diagnosed in 2018 or later. Multivariable

Cox regression was used to identify factors associated with overall survival (OS).

Results

Of 179,854 GBM patients, 6,941 (4.2%) were YAs. Compared with older adults, YAs were more likely to be non-White (19.9% vs. 10.8%), uninsured (5.9% vs. 2.2%), and treated at academic centers (75.9% vs. 68.0%). YAs more frequently underwent gross total resection (30.0% vs. 25.1%) and received the Stupp regimen (58.8% vs. 46.0%). Median OS time was significantly longer in YAs (25.8 vs. 11.4 months, $p < 0.001$), with 5-year survival probabilities of 30.6% for YAs vs. 5.0% for older adults. Multivariable analysis confirmed that YA status was independently associated with improved OS (hazard ratio = 0.43, $p < 0.001$).

Conclusion

YA GBM patients experience better survival and receive more aggressive treatment than older adults. These findings support the need for age-adapted therapeutic strategies and highlight the importance of integrating molecular profiling and survivorship planning in YA GBM care.

Data availability

Analyses generated during the current study are available from the corresponding author on reasonable request within 1 year of study publication.

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Funding

This work was supported in part by Cancer Center Support (Core) grant P30 CA016672 from the National Cancer Institute, National Institutes of Health, to The University of Texas MD Anderson Cancer Center.

Author information

Authors and Affiliations

Department of Central Nervous System Radiation Oncology, The University of Texas MD Anderson Cancer Center, Houston, TX, USA

Ory Haisraely, Srivatsa Vedala, Areeba Al-Sharfeen, Gohar S. Manzar, Subha Perni, Martin C. Tom, Thomas H. Beckham, Chenyang Wang, Debra N. Yeboa, Caroline Chung, Mary Frances McAleer, Amol J. Ghia, Susan L. McGovern, Christine F. Wogan, Jing Li & Brian De

Department of Neurosurgery, The University of Texas MD Anderson Cancer Center, Houston, TX, USA

Chibawanye I. Ene

Department of Neuro-Oncology, The University of Texas MD Anderson Cancer Center, Houston, TX, USA

Shiao-Pei Weathers

Department of Pediatrics, The University of Texas MD Anderson Cancer Center, Houston, TX, USA

Michael Roth

Contributions

Conception or design of the work: Haisraely, Roth, De. Data collection: Haisraely, De. Data analysis and interpretation: Haisraely, De. Drafting the article: Haisraely, Roth, De. Critical revision of the article: All authors. Final approval of the version to be published: All authors.

Corresponding author

Correspondence to Brian De.

Ethics declarations

Competing interests

The authors declare no competing interests.

Additional information

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Electronic supplementary material

Below is the link to the electronic supplementary material.

Supplementary Material 1

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Cite this article

Haisraely, O., Vedala, S., Al-Sharfeen, A. *et al.* Glioblastoma in young adult patients: contemporary patterns of care and survival in the United States. *J Neurooncol* (2025). https://doi.org/10.1007/s11060-025-05135-5

Received	Accepted	Published
01 May 2025	12 June 2025	15 July 2025

DOI
https://doi.org/10.1007/s11060-025-05135-5