

Clin Neurol Neurosurg. 2024 Jul 26;245:108469. doi: 10.1016/j.clineuro.2024.108469.

Online ahead of print.

Surgical resection of glioblastoma in the very elderly: An analysis of survival outcomes using the surveillance, epidemiology, and end results database

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PMID: 39079287 DOI: [10.1016/j.clineuro.2024.108469](https://doi.org/10.1016/j.clineuro.2024.108469)

Abstract

Objective: Patients with glioblastoma (GBM) often undergo surgery to prolong survival. However, the use of surgery, and more specifically achieving gross total resection (GTR), in patients >80 years old has yet to be fully assessed. Using the Surveillance, Epidemiology, and End Results (SEER) database, we aim to assess the efficacy of surgical resection, radiotherapy (RT) and chemotherapy (CT) on overall survival (OS) in very elderly GBM patients compared to elderly counterparts (age 65-79 years).

Methods: The SEER database was queried for all patients >65 years old with GBM (2000-2020). Patients not undergoing surgery or biopsy were excluded. Patients were stratified by age, and demographic relationships were assessed with chi-squared testing for categorical variables. Bivariable models were created using Kaplan-Meier survival estimates. All significant variables from bivariable analysis were included on multivariable Cox survival regression models to determine independent associations between clinical variables and OS.

Results: A total of 27,090 operative GBM patients were identified; 1868 patients (15.92 %) were very elderly and 10,092 patients (84.38 %) were elderly. Very elderly patients were less likely to undergo GTR (28 % vs 35 %, $p<0.001$), RT (59 % vs 78 %, $p<0.001$) and CT (40 % vs 66 %, $p<0.001$). In multivariable Cox regression analysis, very elderly patients who achieved GTR (HR=.696, $p<0.001$), received RT (HR=0.583, $p<0.001$) and underwent CT (HR=0.4197, $p<0.001$) had significantly improved OS compared to very elderly patients that did not undergo these treatment options.

Conclusion: Currently, very elderly GBM patients undergo lower rates of aggressive surgery, RT and CT. However, very elderly patients that undergo surgery, RT and CT may have a survival advantage. These treatments should be considered as potential options for this patient population.

Keywords: Glioblastoma; Radiotherapy; Resection; Survival; Very elderly.

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