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# Factors associated with longer survival among older medicare patients after diagnosis of supratentorial primary brain malignancies: a retrospective cohort study

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## Abstract

**Objectives:** Despite recent advances, the prognosis for primary malignant brain tumors (PMBTs) remains poor. Some commonly prescribed medications may exhibit anti-tumor properties in various cancers, and neurodegenerative diseases may activate pathways that counteract gliomagenesis. Our study is focused on determining if there is a correlation between the use of metformin, beta-blockers, angiotensin converting enzyme inhibitors (ACEIs), and angiotensin receptor blockers (ARBs), or the presence of Parkinson's disease (PD), and the survival rates following a diagnosis of a PMBT.

**Methods:** This analysis of the 100% Texas Medicare Database identified patients aged 66+ years diagnosed with a supratentorial PMBT from 2014-2017. Cox proportional hazards regression was employed to analyze survival following diagnosis and associations of survival with surgical intervention, radiation, PD diagnosis, and prescription of metformin, beta-blockers, ACEIs, or ARBs.

**Results:** There were 1,943 patients who met study criteria, and the median age was 74 years. When medication utilization was stratified by none, pre-diagnosis only, post-diagnosis only, or both pre- and post-diagnosis (continuous), continuous utilization of metformin, beta-blockers, ACEIs, or ARBs was associated with prolonged survival compared to no utilization (hazard ratio [HR]:0.45, 95% CI: 0.33-0.62; HR:0.71, 95% CI:0.59-0.86; HR:0.59, 95% CI:0.48-0.72; and HR:0.45, 95% CI:0.35-0.58 respectively). PD was also associated with longer survival (HR:0.59-0.63 across the four models).

**Discussion:** Our study suggests that metformin, beta-blockers, ACEIs, ARBs, and comorbid PD are associated with a survival benefit among geriatric Medicare patients with supratentorial PMBTs.

**Keywords:** Primary malignant brain tumor; geriatric; glioblastoma; medicare database; neuro-oncology; neurosurgery; survival.

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