ABSTRACT

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Glioblastoma with deep supratentorial extension is associated with a worse overall survival.

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Glioblastoma (GBM) with deep-supratentorial extension (DSE) involving the thalamus, basal ganglia and corpus collosum, poses significant challenges for clinical management. In this study, we present our outcomes in patients who underwent resection of supratentorial GBM with associated involvement of deep brain structures. We conducted a retrospective review of patients who underwent resection of GBM at our institution between 2012 and 2018. A total of 419 patients were included whose pre-operative MRI scans were reviewed. Of these, 143 (34.1%) had GBM with DSE. There were similar rates of IDH-1 mutation (9% versus 7.6%, p = 0.940) and MGMT methylation status (35.7% versus 45.2%, p = 0.397) between the two cohorts. GBM patients without evidence of DSE had higher rates of radiographic gross total resection (GTR) compared to those with DSE: 70.6% versus 53.1%, respectively (p = 0.002). The presence of DSE was not associated with decreased progression-free survival (PFS) compared to patients without DSE (mean 7.24 ± 0.97 versus 8.89 ± 0.76 months, respectively; p = 0.276), but did portend a worse overall survival (OS) (mean 10.55 ± 1.04 versus 15.02 ± 1.05 months, respectively; p = 0.003). There was no difference in PFS or OS amongst DSE and non-DSE patients who underwent GTR, but patients who harbored DSE and underwent subtotal resection had worse OS (mean 8.26 ± 1.93 versus 12.96 ± 1.59 months, p = 0.03). Our study shows that GBM patients with DSE have lower OS compared to those without DSE. This survival difference appears to be primarily related to the limited surgical extent of resection owing to the neurological deficits that may be incurred with involvement of eloquent deep brain structures.

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