

ID: 158

Scientific Abstract

Topics: Radiation Oncology

Keywords: Glioblastoma, Radiotherapy, Eloquent areas

Glioblastoma Location Predicts Survival

Gail Wan Ying Chua, Grace Kusumawidjaja, Kevin Lee Min Chua

National Cancer Centre, Singapore

Objectives

Location of glioblastoma (GBM) can be divided into silent or eloquent areas using functional MRI (fMRI), the latter showing inferior overall survival (OS). Our single-institutional study classified tumour location based on diagnostic MRIs, without requiring costlier fMRIs. We hypothesized that patients with tumours in non-eloquent areas had better OS than those in near-eloquent and eloquent areas.

Methods and Materials

We analysed outcomes of 68 GBM patients receiving concurrent temozolomide and radiotherapy (60 Gy/30#) between 2007-2016. Pretreatment MRIs were reviewed by 2 radiation oncologists. Eloquent areas were defined as cortical areas controlling sensory, linguistic, or motor ability. Near-eloquent areas were <8 mm from eloquent areas. OS and progression-free survival (PFS) were analysed with log-rank test.

Results

Tumours in non-eloquent, near-eloquent and eloquent areas were found in 23.6%, 35.3% and 41.1% of patients. Median OS was 22.0 mo, 15.8 mo and 12.9 mo. Compared to those in non-eloquent areas, those in near-eloquent areas had poorer OS (hazard ratio: 0.449 [0.197-1.02], p=0.056), likewise for those in eloquent areas (HR 0.435 [0.189-1.00], p=0.050). 46.0% tumours in non-eloquent areas had limited resection. Interestingly this subset also had improved OS (median 20.2 mo). Median PFS was similar (9.0 mo) across groups.

Conclusion

Location of GBM in non-eloquent areas predicts for significantly better OS than near or eloquent areas, regardless of resection extent. Difference in PFS was insignificant, suggesting equivalent disease control between groups. However, treating tumours in/near eloquent areas may lead to physical deficits, resulting in poorer OS. We aim to incorporate other factors to create a prognostic scoring system, and develop MRI reporting guidelines specifying eloquent/near/non-eloquent areas.