

LINKING OPTIC NERVE SHEATH DIAMETERS AND GLIOBLASTOMA MULTIFORME: A RETROSPECTIVE ANALYSIS

Alysha Vartevan; Tyler Campbell; Steve Deprima

Department of Radiology, Miami Neuroscience Center at Larkin Community Hospital, South Miami, FL

The optic nerve sheath diameter (ONSD) measurement includes the dural sheath, subarachnoid space and optic nerve. Increased ONSD has long been associated with increased intracranial pressure; however, to our knowledge there have been no studies examining the specificity of increased ONSD. More specifically, there have not been studies examining the relationship between ONSD and primary intracranial tumors such as Glioblastoma Multiforme (GBM). Accordingly, we investigated whether ONSD size measured with T2 MRI imaging is an indicator of GBM tumor size. Images from 24 patients with GBM were retrospectively examined by two independently trained observers. The right and left ONSD at the insertion to the globe as well as the largest dimension of the tumor were considered standard measurements. Three patients were excluded because of infiltrating masses with indistinct dimensions on their MRI scans. Descriptive statistics were 54.4 ± 17.3 cm for the largest tumor dimension, 6.8 ± 0.6 mm for the ONSD on the right, and 6.5 ± 0.7 mm for the ONSD on the left. The intraclass correlation for the average measurements between the two observers was 95%. When controlling for each of the ONSD sides, the ONSD size was shown to significantly ($r=.0489$, $p = 0.024$) predict 24% of the variance in the size of the tumor. Although the sample size was small and a larger patient population is needed, these results suggest the ONSD size is strongly associated with tumor size. Our results suggest that ONSD size could be a promising indicator of GBM tumor growth.