**ABSTRACT CITATION ID: NOAE064.604**

**QOL-16. IMPACT OF LESION LOCATION ON MOTOR AND COGNITIVE OUTCOMES IN PEDIATRIC CEREBELLAR TUMORS**

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**BACKGROUND:** Children with cerebellar damage are at increased risk for various adverse outcomes, including higher rates of autism and long-term neurocognitive challenges. Traditionally considered a motor structure, extensive evidence links the cerebellum to a range of behaviors and atypical cerebellar structure and function have been reported in multiple neurodevelopmental and psychiatric conditions. A key feature of cerebellar neuroanatomy are the functional subregions that support sensorimotor and non-motor functions, leading to the hypothesis that motor, cognitive and behavioral outcomes should be predicted by the cerebellar lesion location. We aimed to determine how lesion location relates to outcomes in pediatric cerebellar patients. We predicted that lesions of the anterior lobe would disrupt motor performance, posterolateral lesions would impact cognitive functions, and behavioral dysregulation would be associated with posterior midline damage.

**METHODS:** We conducted lesion-symptom mapping in 30 children with a history of cerebellar tumor resection (sex: 19 male, 11 female; age at diagnosis, mean 6.8 years [SD 4.2]). Clinical MRI scans and neuropsychological data were used to evaluate the impact of lesion location on motor (pegboard), cognitive (verbal comprehension, verbal fluency, working memory, processing speed) and behavioral control (BRIEF). We mapped individual lesions using T1-weighted MRIs and normalized the lesion maps into standard template space for group analyses.

**RESULTS:** Behavioral scores ranged from impaired to above average. Lesion overlap maps were used to assess the lesion patterns associated with performance. As predicted, anterior and medial lesions disrupted motor performance and processing speed; posterolateral lesions were associated with impaired cognitive scores.

**CONCLUSIONS:** These preliminary analyses indicate that long-term outcomes are associated with disruption of specific cerebellar subregions. This could aid in prognosis and management of pediatric cerebellar tumor patients. Future work will address age of surgery, longitudinal changes in performance, and the developmental impact of early cerebellar disruption on supratentorial structures.