Abstracts

RO-02. CEREBRAL MICROBLEEDS ARE ASSOCIATED WITH WORSE EXECUTIVE FUNCTION IN PEDIATRIC BRAIN TUMOR SURVIVORS

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BACKGROUND: A specific form of small-vessel vasculopathy – cerebral microbleeds (CMBs) – has been linked to various types of dementia in

adults. We assessed the association of CMBs with neurocognitive function in a cohort of pediatric brain tumor survivors. **METHODS:** In a multi-institutional cohort of 149 pediatric brain tumor patients who received cranial radiation therapy (CRT) prior to age 21, between 1987–2014, we assessed neurocognitive function using a computerized testing program (CogState). We previously reviewed brain MRI scans to determine the presence of CMBs post-CRT. Linear regression models were used to assess effects of CMBs on neurocognitive function. **RESULTS:** In multi-variable analysis, CMBs were associated with worse performance in all assessed domains, including executive function, psychomotor function, delayed recall, verbal learning, attention, and working memory. Specifically, children with CMBs had a 27-point increase in the Groton Maze Learning Test (GML) (95% CI 25 to 29, $p = <0.001$) compared to those without CMBs, indicating worse executive function when CMBs were present. Additionally, CMBs were associated with domain-specific deficits. CMBs in the frontal lobe were particularly associated with worse performance on the GML (39 point increase, $p < 0.001$, 95% CI 35.9–40.0). Presence of CMBs in the temporal lobes affected verbal memory (missed words 6.4, 95% CI 5.9– 6.8). Occipital lobe CMBs were associated with worse psychomotor function (1.5 millisecond increase in detection time, $p < 0.001$, 95% CI 1.4–1.5). **CONCLUSIONS:** CMBs are associated with neurocognitive function in pediatric brain tumor survivors, and location of CMBs influences cognitive deficit.