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A – 114 Long Term Cognitive Sequela of Intracranial Radiation Therapy in a Pediatric Cerebellar Medulloblastoma Survivor

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Abstract

Objective: Intracranial radiation therapy (IRT) for pediatric brain tumors is associated with late delayed brain injury due to cerebrovascular abnormality, white matter necrosis, demyelination, and gliosis which are irreversible. As a result, persistent cognitive deficits in adulthood emerge which are aggravated by younger age at diagnosis, higher radiation dose, whole brain radiation (WBR), and concurrent chemotherapy. The case is a childhood brain tumor survivor seen 18 years post treatment who displayed cognitive deficits reflecting the cognitive sequela of WBR that overlapped with the anatomical distribution of white matter damage sustained.

Method: 23-year-old Black male with a history of childhood cerebellar medulloblastoma diagnosed at age 4, tumor resection, WBR, chemotherapy, more recent seizure disorder and medullary stroke, diabetes, and hypertension was seen for a neuropsychological evaluation due to memory complaints. His neuroimaging showed white matter hyperintensities in bilateral temporal and occipital lobes, bilateral cerebellar hemispheres, bilateral frontal lobes, medial posterior right cerebellar cyst, and 10 x 5 mm cyst in the left temporal lobe.

Results: Results showed FSIQ = 59 and deficits in language, processing speed, visuospatial abilities, executive functioning, and verbal memory. His auditory working memory and visual memory were preserved. Based on his numerous adaptive limitations, moderate intellectual development disorder diagnosis was given.

Conclusions: Deficits across several cognitive domains were consistent with multi-focal white matter lesions seen in patient's neuroimaging which reflect radiographic findings related to long-term sequela of previous intracranial radiation. A unique finding was relatively preserved visual memory as findings related to asymmetrical memory dysfunction in childhood medulloblastoma survivors are scarce.