

and Inhibition ($p < .001$, unique- $R^2 = .05$), but not Color Naming, were significant predictors of Inhibition/Switching performance ($p < .001$, $R^2 = .67$). On the VF subtest, Letter Fluency ($p = .009$, unique- $R^2 = .06$) and Category Fluency ($p < .001$, unique- $R^2 = .08$) were significant predictors of Category Switching Accuracy performance ($p < .001$, $R^2 = .37$).

Conclusions: Findings suggest that CF may not differ between survivors and their healthy peers, but that other factors of executive functioning, such as processing speed, drive performance differences on measures of CF. As these tasks rely heavily on speed, survivors may be slower than their healthy counterparts, but may not perform worse on set-shifting. In addition, these results highlight the importance of controlling for lower-order processes in analyses to help isolate CF performance and more accurately characterize potential differences between groups. While replication of findings in survivors and other clinical groups (e.g., congenital heart disease, traumatic brain injury) is still needed, this work can help inform which processes are most important to account for, which is not yet established.

Categories: Cancer

Keyword 1: brain tumor

Keyword 2: executive functions

Keyword 3: neuropsychological assessment

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10 Comprehensive Neuropsychological Findings in Erdheim-Chester Disease: Case Report

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Objective: Erdheim-Chester disease (ECD) is a rare disorder characterized by excessive production and accumulation of histiocytes within multiple tissues and organs. ECD primarily affects adults, and symptoms vary depending upon the specific location and severity. Etiology is not always known, but some patients with ECD may have a non-inherited

genetic change that allows histiocytes to reproduce uncontrollably. Currently, the cognitive outcomes of ECD are not well understood, and there are no previous neuropsychological findings in the literature. Thus, the objective of this case study was to describe the neuropsychological presentation and findings of an ECD case to inform diagnosis and treatment better.

Participants and Methods: The patient was a 64-year-old white, non-Hispanic, right-handed man diagnosed with ECD in 2017. ECD accounted for a constellation of medical problems, including diabetes insipidus, hypogonadism, and interstitial lung disease. A brain MRI in 2018 revealed orbital nodularities and pituitary infiltration thought to be consistent with ECD. The patient first noticed cognitive functioning difficulties in 2020 primarily related to short-term memory. Approximately two years later, he noted significant cognitive changes, including difficulties recalling recent events, dates, and conversations, problem-solving, and planning. He had difficulty driving and had two recent car accidents when leaving his driveway. Physically, he reported increased fatigue, unsteadiness, and occasional falls. In 2022, he had a brain MRI that demonstrated a progression of multiple diffuse cerebral, cerebellum, and brainstem lesions and cerebral volume loss compared to prior imaging. He was referred for a neuropsychological assessment to rule out a neurodegenerative disorder.

Results: Neuropsychological data demonstrated moderate-to-severe deficits on tests of basic spatial working memory, visually based processing speed, visual memory, letter verbal fluency, and semantic verbal fluency. He demonstrated mild-to-moderate deficits on tests of basic auditory attention, verbal memory, higher-level visuospatial processing, abstract nonverbal reasoning, multistep, organization and planning, self-monitoring of performance quality, and fine hand and motor dexterity. He demonstrated variable initial learning of new information across modalities, although he did benefit from structured verbal material. Recognition was variable, with difficulty demonstrated in discriminating visual information presented, from similar competing information, along with availability recalling visual information. He showed average auditory-based divided attention, confrontational object naming, and abstract verbal reasoning. Regarding his emotional functioning, he reported mild depressive and anxiety symptoms.

Conclusions: To the best of our knowledge, this is the first report documenting detailed neuropsychological data on this rare disease. The case study documents widespread cognitive deficits with greater difficulty with visually based abilities than verbal abilities. Specifically, patients with ECD may present with cognitive difficulties in visual learning and memory, processing speed, visuospatial processing, select areas of executive/frontal systems, letter and semantic verbal fluency, and fine motor dexterity.

Categories: Cancer

Keyword 1: cancer

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11 Social Determinants of Health in Pediatric Brain Tumor Survivors: Associations between Neighborhood Opportunity and Neurocognitive and Psychological Outcomes

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Objective: A growing body of research demonstrates that social determinants of health (SDOH) are important predictors of neurocognitive and psychological outcomes in survivors of pediatric brain tumor (PBT). Existing research has focused primarily on individual level SDOH (e.g., family income, education, insurance status). Thus, more information is needed to understand community level factors which may contribute to health inequities in PBT survivors. This study aimed to examine the effects of specific aspects of neighborhood opportunity on cognitive and emotional/behavioral outcomes among PBT survivors.

Participants and Methods: The sample included clinically-referred PBT survivors who completed a neuropsychological evaluation (N=199, Mage=11.63, SD= 4.63, 56.8% male, 71.8% White). Data included an age-appropriate Wechsler Scale and parent-report questionnaires (Behavior Rating Inventory of

Executive Function, Child Behavior Checklist). Nationally-normed Child Opportunity Index (COI) scores were extracted for each participant from electronic medical records based on home address using Census tract geocoding. The COI measures neighborhood-level quality of environmental and social conditions that contribute to positive health. It includes three component scores assessing distinct aspects of opportunity, which include educational opportunity (e.g., educational quality, resources, and outcomes), health/environmental opportunity (e.g., access to healthy food, healthcare, and greenspace) and social/economic opportunity (e.g., income, employment, poverty). Stepwise linear regression models were examined to identify significant predictors of cognitive/psychological outcomes associated with PBT; the three COI indices were entered as predictors and retained in the model if they significantly contribute to variance in the outcome.

Results: Lower educational opportunity was associated with lower processing speed performance (Wechsler Processing Speed Index: $t = 2.47$, $p = 0.02$) and increased parent-reported executive functioning problems (BRIEF GEC: $t = -2.25$, $p = 0.03$; BRIEF Working Memory: $t = -2.45$, $p = 0.02$) and externalizing problems (CBCL Externalizing: $t = -2.19$, $p = 0.03$). Lower social/economic opportunity was associated with lower working memory performance (Wechsler Working Memory Index: $t = 2.63$, $p < 0.01$) and increased parent-reported internalizing problems (CBCL Internalizing: $t = -2.38$, $p = 0.02$). Health/environmental opportunity did not emerge as a primary predictor of any of the examined cognitive/psychological outcomes. Exploratory analyses examining the impact of age on associations between COI and cognitive/psychological outcomes found a significant moderation effect of age on the relationship between educational opportunity and processing speed ($t = 2.35$, $p = 0.02$) such that this association was stronger at older ages. There were no other moderation effects by age.

Conclusions: Consistent with a growing body of literature demonstrating the impact of social and environmental contexts to health outcomes, these results show inequities in neurocognitive and psychosocial outcomes in PBT survivors related to neighborhood-level SDOH. Examination of specific neighborhood factors highlight educational and social/economic factors as particularly important contributors to