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4 The Association Between Pro-Inflammatory Cytokines and C-Reactive Protein and the Cognitive and Neurological Outcome in Stroke Survivors: A Systematic Review

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Objective: Childhood ischemic and hemorrhagic stroke is often associated with neuropsychological and cognitive deficits. Stroke induces an inflammatory response in the central and peripheral nervous systems. High levels of inflammatory markers in the plasma have been associated with poorer cognitive outcomes. The role of inflammation in neurological prognosis of stroke has been studied previously; however, there is a limited understanding of the association between inflammatory markers and neuropsychological outcome post-stroke. The present review examined the existing literature on the association between inflammatory markers and post-stroke functioning.
Participants and Methods: Data bases (PsycINFO, PubMed, Web of Science, and Ovid) were reviewed in October 2020. Articles were restricted to English-language literature. Articles were included regardless of recruitment setting, number of strokes, mechanism of stroke, timing of blood collection and outcome assessment. The articles focused on patients with stroke (between the ages of 0 to 95), measured post-stroke outcome by neurological and cognitive outcome measures (i.e., it included findings on any aspect of cognition such as memory, information processing, or attention), and on pro-inflammatory cytokines and c-reactive proteins as measures of inflammation. The systematic literature search retrieved 954 articles to review against inclusion criteria. Descriptive statistics were performed using IBM SPSS 27.0 Statistics Software.
Results: A total of 18 articles were included in this review. The population age ranged from 21 to 95, and, when reported (n=17), mean participant age was 66.31. Among stroke patient populations, ischemic stroke was most researched (n=15). The most widely investigated biomarkers were CRP (n=9), IL-6 (n=8), TNF- a (n=7), IL-1 b (n=5), and IL-10 (n=5). The time of initial blood collection ranged from on admission to within 3 months poststroke. Equal number of studies used both neurological and cognitive tests (n=7), or only neurological (n=7), 2 studies only used cognitive tests, and one study used all three types of measures. The most commonly used cognitive test was the Mini Mental State Examination, MMSE (n=7). The next commonly used cognitive test was the Montreal Cognitive Assessment (MoCA), (n=4). Only two studies used a comprehensive neuropsychological battery.
Conclusions: There is a lack of research into diverse stroke populations. All the studies examined the association between inflammatory markers and the post-stroke outcomes in adult populations and mostly in patients with ischemic stroke. The lack of research on pediatric and young adult stroke represents a significant gap in understanding predictors of neurological and cognitive outcomes. Further, the review revealed a lack of comprehensive neurocognitive assessment post stroke, with most studies measuring neuropsychological outcome using brief cognitive instruments. Our findings highlight a critical need for addressing the above gaps to help elucidate the role of inflammatory markers in the neuropsychological prognosis of stroke in younger populations.

Categories: Stroke/Cerebrovascular Injury & Disease (Child)
Keyword 1: stroke
Keyword 2: cognitive functioning
Keyword 3: neuroimmunology
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Symposium 02: Current Directions in Women's Neuropsychology Research

9:00 - 10:30am
Thursday, 2nd February, 2023

https://doi.org/10.1017/S135561772300187X Published online by Cambridge University Press

Town & Country Ballroom B

Chair

Erin Sullivan-Baca
Private Practice, Dallas, USA
Rachael Ellison
Illinois Institute of Technology, Chicago, USA

Summary Abstract:
A longstanding trend of underrepresentation of women in pre-clinical and clinical research limits our understanding of women's issues across several scientific fields, including neuropsychology and related disciplines. Highlighting this trend is the fact that only 2-6% of studies across major neuroscience journals over the last decade were conducted exclusively in women/females. This pattern of research limits our understanding of how women's unique physiological, hormonal, psychiatric, and psychosocial presentations contribute to their brain health. Inclusion efforts aimed at increasing the study of more diverse populations have resulted in a nascent understanding of sex differences across several neuropsychological conditions, with implications for identification, prevention, and intervention efforts unique to women.
In this seminar, we highlight current efforts by neuropsychologists to expand research of women in order to enhance our understanding and clinical care of this population. Of note, we use the standardized term "women" to describe a biological category (females) and/or a self-identified gender trait, which varies depending on the scope of the research and data availability. We highlight five lines of women's-focused research spanning epilepsy/seizure disorders, traumatic brain injury (TBI), Alzheimer's Disease (AD), and neurotoxicant exposure. In Dr. Sullivan-Baca's presentation, ongoing lines of research into the clinical presentations of women with epilepsy are discussed. Findings highlight substantial psychiatric burden and unique medical factors to consider in women within this population. Dr. Jak's presentation expands on concussion outcomes in women using the national FITBIR database and highlights a sex difference in post-concussive outcomes, with increased cognitive and somatic symptoms in women compared to men. Dr. Rapport and colleagues focus on the experience of menopause after TBI and discuss validation of a menopause symptom survey for TBI survivors. Dr. Sundermann's presentation covers findings on women's unique preclinical Alzheimer's Disease trajectories. Dr. Krengel focuses on health trajectories for women Veterans exposed to neurotoxicants during the Gulf War and underlines sex differences in neuropsychological test performance.
Through these presentations, our goal is both to inform and to inspire. Overall, we seek to orient members of our field to current directions in women's research so they can better understand how women are differentially affected by neurological conditions. Clinically, we hope this knowledge will encourage neuropsychologists to understand how their women patients' unique experiences of sex and gender contribute to their brain health. For researchers, we hope that attending this symposium will encourage pursuit of women's-focused lines of inquiry. Furthermore, we hope to inspire training institutions to integrate this type of research more systematically into graduate student didactics and training, particularly for those students in neuropsychology-focused training.
Keyword 1: inclusion

1 Significant Psychiatric Burden Exists in Women Veterans with Drug-Resistant Epilepsy

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Objective: Epilepsy, and specifically drug-resistant epilepsy (DRE), is associated with an increased risk of psychiatric dysfunction, likely due to a combination of physiological mechanisms, emotional reactions to disease

https://doi.org/10.1017/S135561772300187X Published online by Cambridge University Press