Menopausal Vasomotor Symptoms and Brain Aging in Women

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USA

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Menopausal Vasomotor Symptoms and Brain Aging in Women

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1

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Alzheimer's disease & other dementias

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Research Abstract

Alzheimer's disease (AD) is the leading cause of dementia in the United States. Women are particularly affected by AD. Compared to men, women have a higher prevalence of AD, higher risk of AD with the apolipoprotein (APOE)-?4 allele, and a more rapid decline in cognition following diagnosis of mild cognitive impairment or AD. The neuropathological hallmarks of AD are laid down beginning at midlife, and increasing evidence supports the need to better understand midlife risk factors for cognitive change early in the natural history of AD. However, few studies have examined sex-specific midlife risk factors. The menopause is a critical midlife transition affecting multiple aspects of women's health, including brain and cardiovascular outcomes. Clinical studies show small but significant decrements in subjective memory complaints, performance on standardized memory tests, and brain function as women transition through the menopause. Accelerated accumulation of atherosclerosis and worsening of key cardiovascular disease (CVD) risk factors are also common during this time. These brain and cardiovascular changes are not due to aging alone. Further, over 70% of midlife women report menopausal vasomotor symptoms (VMS); for a third of women they are frequent or persistent for over a decade. VMS have long been believed to be solely a quality of life issue, but recent findings have called this assumption into question. Emerging evidence with state-of-the-art physiologic measures of VMS suggests that VMS may be associated with poorer cognitive function and adverse changes in brain structure and function. A parallel line of research links VMS to an adverse CVD risk factor profile and greater subclinical CVD. In the proposed research we will test whether more frequent or persistent VMS are associated with adverse structural and functional brain outcomes and poorer cognitive function. We will test the role of CVD risk factors and subclinical CVD in these associations, while additionally considering the role of sleep, negative mood, and estradiol concentrations. Finally, we will test APOE status as a moderator of VMS-cognition and brain relations. We will address these questions in a sample of 230 women recruited from an established cohort of midlife women free of CVD and dementia who have undergone detailed physiologic characterization of their VMS as well as of their hormonal, sleep, and CVD risk profiles. We will invite the cohort back to repeat ambulatory physiologic measurement of VMS; ultrasound measures of subclinical CVD (carotid intima media thickness); actigraphic assessment of sleep; and blood markers of CVD risk factors and estradiol. We will also expand the battery to include cognitive testing; APOE genotyping; and functional and structural brain imaging. Findings from this study have the potential to identify VMS as a female- specific marker that can identify midlife women at risk of cognitive decline. This work may ultimately assist in early intervention efforts to improve cognition, enhance brain reserve, and reduce risk for AD among women.

Lay Summary
This research is aimed at understanding whether menopausal vasomotor symptoms, the cardinal symptom of menopause, are linked to brain and cognitive aging in women. Findings from this study can improve the understanding of the role of these symptoms in the pathophysiology of Alzheimer's Disease (AD) and cognitive decline in women. They can point to a female-specific marker that, if treated, may ultimately be able to be used to improve cognition, enhance brain reserve, and reduce the risk for AD in women.

Further information available at:

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