5 Vascular Depression in Older Black Adults: White Matter Hyperintensities, Cognition, and Gait Speed

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Objective: Decreased brain white matter integrity as a result of vascular burden is associated with a form of late-life depression, known as vascular depression (VaDep). Black older adults may be particularly vulnerable to developing VaDep due to a higher prevalence of vascular conditions compared to White older adults. The current study examined whether clinical and imaging markers of vascular burden predicted depressive symptoms in an older Black sample. Based on the literature in primarily White samples, we expected greater clinical vascular burden and white matter hyperintensity (WMH) volume to predict greater depressive symptoms both cross-sectionally and over 4-year follow-up. We additionally hypothesized that participants with operationally-defined VaDep would have worse cognitive performance and slower gait speed compared to those without VaDep. Exploratory analyses examined race (Black vs. White) as an additional predictor.
Participants and Methods: This study used publicly available data from 113 Black older adults who were followed for four years in the Healthy Brain Project (a substudy of the Health, Aging, and Body Composition Study). Clinical vascular burden was defined as the number of vascular conditions (e.g., hypertension, diabetes, stroke); total WMH volume and WMH volume in the uncinate fasciculus, superior longitudinal fasciculus, and cingulum were considered imaging markers of vascular burden. Clinical and imaging-defined vascular burden were used to predict baseline depressive symptoms and average depressive symptoms over follow-up as measured by the Center for Epidemiologic Studies Depression Scale (CES-D). We then formed groups based on cutoffs for vascular burden (two or more conditions) and depressive symptoms (upper tertile of CES-D scores) to compare cognitive (Digit Symbol Substitution Test and 15-Item Executive Interview) and gait speed performance at baseline and changes over four years in VaDep, non-vascular depression, vascular only, and healthy groups. Exploratory analyses included 179 White older adults from the Healthy Brain Project dataset to examine race differences.
Results: Total WMH volume and WMH volume in the uncinate fasciculus predicted higher depressive symptoms both cross-sectionally and longitudinally. However, no similar pattern emerged when using clinically-defined vascular burden as the predictor. The VaDep group had the slowest processing speed but the trajectory of decline over time did not differ between groups. The non-vascular depression group's executive performance improved over time while performance by the other groups remained stable. Both VaDep and non-vascular depression groups' gait speed declined over time. There was a stronger association between depression and uncinate fasciculus WMH in Black compared to White individuals, and the Black VaDep group had the slowest baseline processing speed of all groups.
Conclusions: This research supports the validity of the VaDep framework in Black older adults by showing the impact of WMH, particularly in the uncinate fasciculus, on depressive symptoms and identifying cognitive risks associated with VaDep in this population. Moreover, results suggest WMH may confer a greater risk for depression in Black compared to White older adults, and that VaDep disproportionately impacts processing speed in Black older adults. This work addresses an important gap in the VaDep literature by examining a group that has historically been underserved.

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6 The Role of CPAP Treatment on Associations Between Obstructive Sleep Apnea and Cognition Among Black and White Older Adults

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