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Association of Mediterranean–DASH Intervention for Neurodegenerative Delay and Mediterranean Diets With Alzheimer Disease Pathology

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Abstract

Objective: Diet may reduce Alzheimer's dementia risk and slow cognitive decline, but the understanding of the relevant neuropathologic mechanisms remains limited. The association of dietary patterns with Alzheimer's disease (AD) pathology has been suggested using neuroimaging biomarkers. This study examined the association of MIND and Mediterranean dietary patterns with beta-amyloid load, phosphorylated tau tangles, and global AD pathology in postmortem brain tissue of older adults.

Methods: Autopsied participants of the Rush Memory and Aging Project) with complete dietary information (collected through a validated food frequency questionnaire) and AD pathology data (beta-amyloid load, phosphorylated tau tangles, and global AD pathology [summarized neurofibrillary tangles, neuritic and diffuse plaques]) were included in this study. Linear regression models controlled for age at death, sex, education, APO-ε4 status, and total calories were used to investigate the dietary patterns (MIND and Mediterranean diet) and dietary components associated with AD pathology. Further effect modification was tested for APO-ε4 status and sex.

Results: Among our study participants (N=581, age at death: 91.0 ± 6.3 years; mean age at first dietary assessment: 84.2 ±5.8; 73% female; 6.8 ± 3.9 years of follow-up) dietary patterns were associated with lower global AD pathology (MIND: β= -0.022, p=0.034, standardized β=-2.0; Mediterranean: β=-0.007, p=0.039, standardized β=-2.3) and specifically less beta-amyloid load (MIND: β=-0.068, p=0.050, standardized β=-2.0; Mediterranean: β=-0.040, p=0.004, standardized β=-2.9). The findings persisted when further adjusted for physical activity, smoking, and vascular disease burden. The associations were also retained when participants with mild cognitive impairment or dementia at the baseline dietary assessment were excluded. Those in the highest tertile of green leafy vegetables intake had less global AD pathology when compared to those in the lowest tertile (Tertile-3 vs. Tertile-1: β= -0.115, p=0.0038).

Conclusion: The MIND and Mediterranean diets are associated with less postmortem AD pathology, primarily beta-amyloid load. Among dietary components, green leafy vegetables inversely correlate with AD pathology.