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ORIGINAL RESEARCH COMMUNICATION

Plasma n−3 fatty acids and the risk of cognitive decline in older adults: the Atherosclerosis Risk in Communities Study[1,2,3]

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Background: Plasma fatty acids may affect the risk of cognitive decline in older adults.

Objectives: We prospectively studied the association between plasma fatty acids and cognitive decline in adults aged 50−65 y at baseline and conducted a subgroup analysis.

Design: From 1987 through 1989, the Atherosclerosis Risk in Communities (ARIC) Study analyzed plasma fatty acids in cholesteryl esters and phospholipids in whites residing in Minneapolis, MN. From 1990 through 1992 and from 1996 through 1998, 3 neuropsychological tests in the domains of delayed word recall, psychomotor speed, and verbal fluency were administered. We selected cutoffs for statistically reliable cognitive decline in each of these domains and a measure of global cognitive change computed by principal-components analysis. Multivariate logistic regression was conducted. Focusing on n−3 highly unsaturated fatty acids (HUFAs), a subgroup analysis assessed differential association across potential effect modifiers implicated in oxidative stress and increased risk of neurodegenerative disease.

Results: In the 2251 study subjects, the risk of global cognitive decline increased with elevated palmitic acid in both fractions and with high arachidonic acid and low linoleic acid in cholesteryl esters. Higher n−3 HUFAs reduced the risk of decline in verbal fluency, particularly in hypertensive and dyslipidemic subjects. No significant findings were shown for psychomotor speed or delayed word recall.

Conclusions: Promoting higher intakes of n−3 HUFAs in the diet of hypertensive and dyslipidemic persons may have substantial benefits in reducing their risk of cognitive decline in the area of verbal fluency. However, clinical trials are needed to confirm this finding.

Key Words: Aging • cognitive decline • fatty acids • cholesteryl esters • phospholipids

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