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ORIGINAL RESEARCH COMMUNICATION

Plasma foliate concentration and cognitive performance: Rotterdam Scan Study^{1,2,3}

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Background: Evidence is increasing for beneficial and independent effects of folate on cognitive function, but the underlying biologic mechanism is as yet unknown.

Objective: We examined the independent association of plasma folate concentration with cognitive performance and explored the nature of this association by evaluating brainimaging markers for cerebrovascular disease and brain cell loss.

Design: In the population-based Rotterdam Scan Study, 1033 nondemented participants aged 60-90 y underwent extensive cognitive testing and brain imaging. We crosssectionally examined the association between plasma foliate concentration and cognitive test performance by multivariate linear regression. To evaluate the role of vascular or other mechanisms in this association, we subsequently studied whether plasma folate was related to the presence of white matter lesions and hippocampal and amygdalar volumes.

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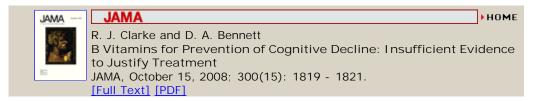
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Results: After multivariate adjustment, the mean change in test score per 1-SD increase in plasma folate was 0.05 (95% CI: 0.01, 0.09) for global cognitive function, 0.08 (95% CI: 0.04, 0.13) for psychomotor speed, and 0.02 (95% Cl: -0.04, 0.07) for memory function. Adjustment for homocysteine concentration only slightly diminished these associations. The odds ratio relating a 1-SD increase in plasma folate to the presence compared with the absence of severe white matter lesions was 0.79 (95% CI: 0.66, 0.94), whereas no relation was seen between folate status and hippocampal or amygdalar volume.

Conclusions: Higher plasma folate concentrations are associated with better global cognitive function and better performance on tests of psychomotor speed, regardless of homocysteine concentration. These associations may be mediated by vascular mechanisms.

Key Words: Folate • cognition • white matter lesions • epidemiology • cohort study

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