Mild vitamin B12 deficiency associated with accelerated cognitive decline, study finds

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(Medical Xpress)—Being mildly vitamin B-12 deficient could be an indication that some older adults are at a greater risk for accelerated cognitive decline, an observational study from researchers at the Jean Mayer USDA Human Nutrition Research Center on Aging (USDA HNRCA) at Tufts University suggests.

Martha Savaria Morris, Ph.D., an epidemiologist in the Nutrition Epidemiology Program at the HNRCA at Tufts University, and colleagues examined data from 549 men and women enrolled in a cohort of the Framingham Heart Study, focusing on scores on the Mini-Mental State Examination (MMSE), a short list of questions and tasks commonly used to screen for dementia. The subjects were divided into five groups, based on their vitamin B-12 blood levels.

Being in the two lowest groups was associated with significantly accelerated cognitive decline, based on an analysis of test scores from 5 MMSE tests given over a period of eight years. The average age at baseline was 75 years-old.

"Men and women in the second lowest group did not fare any better in terms of cognitive decline than those with the worst vitamin B-12 blood levels. Over time, their MMSE scores declined just as rapidly," Morris said. "Rapid neuropsychiatric decline is a well-known consequence of severe vitamin B-12 deficiency, but our findings suggest that adverse cognitive effects of low vitamin B-12 status may affect a much larger proportion of seniors than previously thought."

In the August 2012 issue of the Journal of the American Geriatrics Society, Morris and colleagues write that MMSE scores dropped, on average, 0.24 points per year versus an average drop of 0.35 points annually in the two groups with the lowest vitamin B-12 blood levels. The authors observed an even steeper decline of about 1-point per year in some people in the two lowest groups who also exhibited high blood levels of folate or took supplements containing its synthetic form, folic acid, although their models indicate the additional cognitive decline is potentially related to other health problems in this particular study population.

The subjects in this study were mostly Caucasian women who had earned at least a high school diploma. The authors said future research might include more diverse populations and explore whether vitamin B12 status impacts particular cognitive skills, as the MMSE results provide only a general picture of decline.

"While we emphasize our study does not show causation, our associations raise the concern that some cognitive decline may be the result of inadequate vitamin B-12 in older adults, for whom maintaining normal blood levels can be a challenge," said Paul Jacques, D.Sc., the study's senior author and director of the Nutrition Epidemiology Program.

Animal proteins, such as lean meats, poultry and eggs, are good sources of vitamin B-12. Because older adults may have a hard time absorbing vitamin B-12 from food, the USDA's 2010 Dietary Guidelines for Americans recommend that people over 50 years-old incorporate B-12 fortified foods or supplements in their diets.

Jacob Selhub, Ph.D., director of the Vitamin Metabolism Laboratory at the USDA HNRCA, co-authored the study. Selhub and Jacques are also professors at the Friedman School of Nutrition Science and Policy at

Tufts University.

More information: Morris MS, Selhub J and Jacques PF. "Vitamin B-12 and Folate Status in Relation to Decline in Scores on the Mini-Mental State Examination in the Framingham Heart Study." *Journal of the American Geriatrics Society*. 60:1457-1464, August 2012.

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