

Abstract

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Relationship of homocysteine, folic acid and vitamin B12 with depression in a middle-aged community sample.

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BACKGROUND: Case control studies have supported a relationship between low folic acid and vitamin B12 and high homocysteine levels as possible predictors of depression. The results from epidemiological studies are mixed and largely from elderly populations.

METHOD: A random subsample of 412 persons aged 60-64 years from a larger community sample underwent psychiatric and physical assessments, and brain MRI scans. Subjects were assessed using the PRIME-MD Patient Health Questionnaire for syndromal depression and severity of depressive symptoms. Blood measures included serum folic acid, vitamin B12, homocysteine and creatinine levels, and total antioxidant capacity. MRI scans were quantified for brain atrophy, subcortical atrophy, and periventricular and deep white-matter hyperintensity on T2-weighted imaging.

RESULTS: Being in the lowest quartile of homocysteine was associated with fewer depressive symptoms, after adjusting for sex, physical health, smoking, creatinine, folic acid and B12 levels. Being in the lowest quartile of folic acid was associated with increased depressive symptoms, after adjusting for confounding factors, but adjustment for homocysteine reduced the incidence rate ratio for folic acid to a marginal level. Vitamin B12 levels did not have a significant association with depressive symptoms. While white-matter hyperintensities had significant correlations with both homocysteine and depressive symptoms, the brain measures and total antioxidant capacity did not emerge as significant mediating variables.

CONCLUSIONS: Low folic acid and high homocysteine, but not low vitamin B12 levels, are correlates of depressive symptoms in community-dwelling middle-aged individuals. The effects of folic acid and homocysteine are overlapping but distinct.

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