Elevated plasma homocysteine and low vitamin B-6 status in nonsupplementing older women with rheumatoid arthritis.

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Abstract

OBJECTIVE: The purpose of this study was to determine if nonsupplementing older women (aged >65 years) with rheumatoid arthritis had higher plasma homocysteine and lower B-vitamin status compared to healthy controls. Elevated plasma homocysteine, a risk factor for cardiovascular disease, may help explain why individuals with rheumatoid arthritis have an increased risk of cardiovascular disease.

METHODS: Older, free-living women were classified as rheumatoid arthritis (n=18) or healthy control (n=33). Participants were not using B-vitamin supplements. Fasting blood samples were measured for pyridoxal 5'-phosphate (PLP) (the metabolically active coenzyme form of vitamin B-6), folate, red blood cell folate, vitamin B-12, transcobalamin II, homocysteine, C-reactive protein, and lipid concentrations. Participants completed 7-day weighed food records, the Stanford Health Assessment Questionnaire (HAQ), and a visual analog pain scale.

RESULTS: PLP concentrations were lower in the rheumatoid arthritis vs healthy control participants (4.93+/-3.85 vs 11.35+/-7.11 ng/mL, P<0.01) whereas plasma homocysteine was higher in the rheumatoid arthritis group (1.63+/-0.74 vs 1.15+/-0.38 mg/L, P=0.02). Red blood cell folate concentrations were lower in the rheumatoid arthritis vs healthy control participants [414+/-141 vs 525+/-172 ng/mL [938+/-320 vs 1,190+/-390 nmol/L]; P=0.02]. No significant differences were found for vitamin B-12, and transcobalamin II. An inverse correlation was found between PLP concentrations and the HAQ disability index (r=-0.32; P=0.04). A positive correlation was found between homocysteine concentrations and the HAQ disability index (r=0.36; P=0.01). Total cholesterol and low-density lipoprotein cholesterol levels were lower in the rheumatoid arthritis group (cholesterol 191+/-43 vs 218+/-33 mg/dL [4.95+/-1.11 vs 5.65+/-0.85 mmol/L]; P=0.02; low-density lipoprotein cholesterol 110+/-36 vs 137+/-29 mg/dL [2.85+/-0.93 vs 3.55+/-0.75 mmol/L]; P=0.02). No significant differences were found for protein (g/day), fat (g/day), cholesterol (mg/day), and lipid concentrations.

CONCLUSIONS: Poor vitamin B-6 status and elevated plasma homocysteine concentrations were seen in older women with rheumatoid arthritis compared to healthy controls and may contribute to their increased risk of cardiovascular disease.

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