Vitamin B-12 treatment of asymptomatic, deficient, elderly Chileans improves conductivity in myelinated peripheral nerves, but high serum folate impairs vitamin B-12 status response assessed by the combined indicator of vitamin B-12 status

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Resumen

Background: It is uncertain whether vitamin B-12 supplementation can improve neurophysiologic function in asymptomatic elderly with low vitamin B-12 status or whether folate status affects responses to vitamin B-12 supplementation.

Objective: We assessed the effects of a single intramuscular injection of 10 mg vitamin B-12 (which also contained 100 mg vitamin B-6 and 100 mg vitamin B-1) on vitamin B-12 status and neurophysiologic function in elderly community-dwelling Chileans with low serum vitamin B-12 concentrations who were consuming bread fortified with folic acid.

Design: A pretreatment and posttreatment study was conducted in 51 participants (median +/- SD age: 73 +/- 3 y; women: 47%) with serum vitamin B-12 concentrations <120 pmol/L at screening. Vitamin B-12 status was defined by combining vitamin B-12, plasma total homocysteine (tHcy), methylmalonic acid (MMA), and holtranscobalmin into one variable [combined indicator of vitamin B-12 status (cB-12)]. The response to treatment was assessed by measuring cB-12 and neurophysiologic variables at baseline and 4 mo after treatment.

Results: Treatment increased serum vitamin B-12, holotranscobalamin, and cB-12 ($P < 0.001$) and reduced plasma tHcy and serum MMA ($P < 0.001$). Treatment produced consistent improvements in conduction in myelinated peripheral nerves; the sensory latency of both the left and right sural nerves improved on the basis of faster median conduction times of 3.1 and 3.0 ms and 3.3 and 3.4 ms, respectively ($P < 0.0001$). A total of 10 sensory potentials were newly observed in sural nerves

after treatment. Participants with high serum folate at baseline (above the median, >= 33.9 nmol/L) had less improvement in cB-12 (P < 0.001) than did individuals whose serum folate was less than the median concentration (i.e., with a concentration <33.9 nmol/L).

Conclusion: Asymptomatic Chilean elderly with poor vitamin B-12 status displayed improved conductivity in myelinated peripheral nerves after vitamin B-12 treatment and an interaction with folate status, which was detected only with the use of cB-12.

Palabras clave

Palabras clave de autor:folate; vitamin B-12; holotranscobalamin; methylmalonic acid; total homocysteine; folic acid fortification;nerve conductivity; elderly; Chile
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