

Abstract

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Low dietary magnesium increases supraventricular ectopy.

Klevay LM, Milne DB.

US Department of Agriculture, Agricultural Research Service, Grand Forks Human Nutrition Research Center, ND 58202-9034, USA.

BACKGROUND: Magnesium has been suggested to be beneficial in counteracting all phases of the processes that lead to ischemic heart disease, including terminal events such as arrhythmia and sudden death.

OBJECTIVE: We tested the hypothesis that an intake of magnesium considerably below the recommended dietary allowance can produce chemical and physiologic evidence of depletion.

DESIGN: Twenty-two postmenopausal women were maintained in a metabolic unit and ate a diet of conventional foods containing less than one-half of or more than the recommended dietary allowance for magnesium (320 mg/d). Dietary assignments were random and double blind in a crossover design. Magnesium concentrations were measured by spectroscopy and ion-specific electrolyte analysis, and Holter electrocardiograms lasting approximate 21 h were recorded.

RESULTS: Magnesium concentrations in erythrocytes, serum (total and ultrafilterable), and urine were significantly lower when dietary magnesium was lower. Holter monitors showed a significant increase in both supraventricular and supraventricular plus ventricular beats when the dietary magnesium concentration was low. Hypomagnesemia, hypocalcemia, and hypokalemia were not found.

CONCLUSIONS: The magnesium requirement was defined with the use of biochemical and electrophysiologic criteria. The recommended dietary allowance of 320 mg/d seems correct; 130 mg is too little. Persons who live in soft water areas, who use diuretics, or who are predisposed to magnesium loss or ectopic beats may require more dietary magnesium than would others.

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