Response to Lowered Magnesium in Hypertension

We are grateful to Professors Kisters and Gröber for the appraisal of our article on low urinary magnesium excretion, an indicator of dietary magnesium uptake, as a risk factor for developing hypertension. We also very much appreciate the efforts of Professors Kisters and Gröber to further substantiate the importance of magnesium deficiency as an important health problem by mentioning existing evidence on associations of magnesium deficiency with increased pulse pressure and low magnesium intake with increased risk for type 2 diabetes mellitus. In extension hereof, we would like to add our recent finding that low urinary excretion of magnesium, reflecting low intestinal magnesium absorption, is associated with an increased risk of developing coronary heart disease among ≈8000 men and women of the Prevention of Renal and Vascular End-stage Disease (PREVEND) study. This is the same general population cohort as in which we found the association of low urinary magnesium excretion with increased risk of hypertension. The inverse association with coronary heart disease was nonlinear, with a threshold around a urinary magnesium excretion of 2.5 mmol/24 h for women and 2.9 mmol/24 h for men. These values correspond to a daily dietary magnesium intake of 200 and 230 mg, respectively (assuming an intestinal absorption rate of ≈30%), which is below the recommended daily allowance of 320 mg for women and 420 mg for men. Subjects with a urinary magnesium excretion below this threshold had a 60% increase in the risk of developing coronary heart disease compared with the remainder of the cohort. The association was independent of conventional cardiovascular risk factors and other important dietary cations, including urinary excretions of calcium, sodium, and potassium, was present among men and women, and was not modified by diabetes mellitus, hypertension, or chronic kidney disease. These results are in line with those of a recent meta-analysis of 16 prospective cohort studies on the prospective association of magnesium intake estimated from dietary recalls with ≈7500 coronary heart disease events in >300,000 individuals.

Taken together, the associations between low dietary magnesium and higher incidence of hypertension, diabetes mellitus, and cardiovascular outcomes are supportive of a role for magnesium in the cause of these chronic diseases. Furthermore, these findings underline dietary recommendations to increase magnesium-rich foods.

Disclosures

None.

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