

Abstract

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Vitamin K supplementation and progression of coronary artery calcium in older men and women.

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BACKGROUND: Coronary artery calcification (CAC) is an independent predictor of cardiovascular disease. A preventive role for vitamin K in CAC progression has been proposed on the basis of the properties of matrix Gla protein (MGP) as a vitamin K-dependent calcification inhibitor.

OBJECTIVE: The objective was to determine the effect of phylloquinone (vitamin K1) supplementation on CAC progression in older men and women.

DESIGN: CAC was measured at baseline and after 3 y of follow-up in 388 healthy men and postmenopausal women; 200 received a multivitamin with 500 microg phylloquinone/d (treatment), and 188 received a multivitamin alone (control).

RESULTS: In an intention-to-treat analysis, there was no difference in CAC progression between the phylloquinone group and the control group; the mean (+/-SEM) changes in Agatston scores were 27 +/- 6 and 37 +/- 7, respectively. In a subgroup analysis of participants who were > or =85% adherent to supplementation (n = 367), there was less CAC progression in the phylloquinone group than in the control group (P = 0.03). Of those with preexisting CAC (Agatston score > 10), those who received phylloquinone supplements had 6% less progression than did those who received the multivitamin alone (P = 0.04). Phylloquinone-associated decreases in CAC progression were independent of changes in serum MGP. MGP carboxylation status was not determined.

CONCLUSIONS: Phylloquinone supplementation slows the progression of CAC in healthy older adults with preexisting CAC, independent of its effect on total MGP concentrations. Because our data are hypothesis-generating, further studies are warranted to clarify this mechanism. This trial was registered at clinicaltrials.gov as NCT00183001.

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