RISK FACTORS

High calcium intake linked to cardiac death

Calcium supplementation is widely used by elderly individuals in Western countries to protect against osteoporosis. However, the effect of excess calcium on extraskeletal systems, such as the heart and vasculature, is largely unknown. Xiao *et al.* now report that a high intake of supplementary calcium (>1,000 mg per day) is associated with an increased risk of death from cardiovascular disease (CVD) in men, but not in women.

In a prospective, cohort study, the effect of calcium supplementation on CVD mortality was assessed in 219,059 men and 169,170 women aged 50–71 years, over a period of 12 years. In men, Xiao *et al.* observed an increased risk of cardiovascular death (relative risk [RR] 1.20, 95% CI 1.05–1.36, $P < 0.001$), mainly attributable to heart disease (RR 1.19, 95% CI 1.03–1.37, $P = 0.001$). Subgroup analyses showed that the adverse effect occurred only among smokers, was not related to dietary calcium intake, and that mortality was not elevated in women. Confounding factors, such as vitamin D intake, family history of cardiac

disease, and duration of supplement use, were not assessed.

These findings contradict both the assumption that calcium supplementation is cardioprotective, and previous studies, such as the Women's Health Initiative, in which an increased CVD risk associated with calcium supplementation in women was reported. Current hypotheses suggest that the net effect of calcium supplements might depend on the exact level of calcium intake, abrupt changes in calcium level, or synergistic risk factors. Data on the overall effect of calcium are inconclusive, and further investigation is needed, but a positive effect on bone health is clear, and increased dietary calcium intake remains a safe way to achieve this aim.

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Original article Xiao, Q. *et al.* Dietary and supplemental calcium intake and cardiovascular disease mortality: the National Institutes of Health–AARP Diet and Health Study. *JAMA Intern. Med.* doi:10.1001/jamainternmed.2013.3283