Established in 1871
Swiss Medical Weekly
Formerly: Schweizerische Medizinische Wochenschrift
The European Journal of Medical Sciences

Letter to the Editor | Published 29 July 2013, doi:10.4414/smw.2013.13821
Cite this as: Swiss Med Wkly. 2013;143:w13821

Vitamin D deficiency and cardiovascular disease

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We read with interest the article by Guessous et al. [1]. The author described an excellent study on vitamin D levels and associated factors. The author mentioned the association between vitamin D and cardiovascular disease, which we found fascinating, and we would like to emphasise the topic. Cardiovascular disease (CVD) is the leading cause of death in the United States. There is an increasing interest in using vitamin D levels as a novel marker for CVD [2], because epidemiological data have shown a strong correlation between the risk of CVD and vitamin D deficiency. A cross-sectional analysis of the NHANES database showed a higher prevalence of CVD among individuals with low levels of 25-hydroxy [25(OH)] vitamin D [3]. The mechanism leading to the increased cardiovascular risk is not clearly understood; however, patients with vitamin D deficiency were found to have upregulation of the renin angiotensin aldosterone system (RAAS). The relationship between vitamin D deficiency and upregulation of the RAAS was also found in a large epidemiological study of 3,000 patients [4]. A recent meta-analysis involving 19 prospective studies (6,123 CVD cases) also showed increased CVD risk in patients with serum 25(OH)-vitamin D levels of 20–60 nmol/L [5].

Though multiple lines of evidence suggest a link between low vitamin D levels and increased risk of CVD, multiple interventional trials have failed to reveal any significant benefit of vitamin D supplementation [6–7]. There is also no benefit of vitamin D supplementation in improvement of diastolic function and regression of left ventricular hypertrophy [8]. Further studies are needed to establish the effect of vitamin D supplementation on CVD risk.

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