MÆDICA - a Journal of Clinical Medicine

JOURNAL CLUB

Vitamin D deficiency is associated with sudden cardiac death, combined cardiovascular events, and mortality in haemodialysis patients

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It is known that patients with dialysis experience an excess mortality, mostly due to sudden cardiac death (SCD). Accumulated data suggest a role of vitamin D in all cause mortality, in general, and in cardiovascular mortality, in particular, as vitamin D appears to be crucial for cardiovascular health; it is also able to protect against infectious diseases.

In patients with chronic kidney disease (CKD), limited sunlight exposure, reduced capacity of the skin to synthesize vitamin D, as well as the loss of vitamin D-binding protein in the urine are mainly responsible for the high prevalence of depressed 25(OH)D levels, which are used to assess vitamin D status. The kidney is the main source for circulating 1,25(OH)2D; in CKD the level of 1,25(OH)2D and its analogues are decreased and it is already a routine to supplement vitamin D in many end-stage CKD patients. This therapy was observed to be associated with improved survival.

The study commented investigated the impact of vitamin D status on cardiovascular outcomes and fatal infections in haemodialysis patients. 25-hydroxyvitamin D was measured in 1108 diabetic haemodialysis patients who participated in the German Diabetes and Dialysis Study and were monitored for a period of 4 years. The endpoints established for this study were sudden cardiac death (SCD), myocardial infarction (MI), stroke and cardiovascular events (CE), death due to heart failure, fatal infections and all cause mortality.

Patients had a mean age of 66 +/- 8 years, 54% of them were males and the average 25-hydroxyvitamin D level at baseline was 39 nmol/L.

Patients with severe vitamin D deficiency [25(OH)D of≤ 25 nmol/L] had a 3-fold higher risk of SCD compared with those with sufficient 25(OH)D levels >75 nmol/L [HR: 2.99, 95% confidence interval (CI): 1.39–6.40]. In addition, cardiovascular events and all cause mortality were highly increased (HR: 1.78, 95% CI: 1.18–2.69, and HR: 1.74, 95% CI: 1.22–2.47, respectively). The vitamin D deficiency did not correlate with stroke and fatal infection, also myocardial infarction and deaths due to heart failure were not meaningfully affected.

The researchers concluded that severe vitamin D deficiency was strongly associated with SCD, CVE and mortality and there were borderline associations with stroke and fatal infections. For establishing whether vitamin D supplementation decreases adverse outcomes are needed further evaluations. ❑

Comment on a paper:
C Drechsler, St Pilz, B Obermayer-Pietsch et al – Vitamin D deficiency is associated with sudden cardiac death, combined cardiovascular events, and mortality in haemodialysis patients. *European Heart Journal* 2010; volume 31:18; 2253-2261