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Longitudinal associations between vitamin D metabolites and sarcopenia in older Australian men: The concord health and ageing in men project

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Statement of the Problem: Low vitamin D status and sarcopenia are important public health issues among older people due to their adverse impact on morbidity and mortality. A better understanding of the influence of vitamin D metabolites on muscle mass and strength is important clinically. The aim is to explore the associations between serum 25-hydroxyvitamin D (25D) and 1, 25-dihydroxyvitamin D (1,25D) levels at baseline and incidence of sarcopenia over time in older Australian community-dwelling older men.

Methodology & Theoretical Orientation: Men aged ≥ 70 years (2005-07) from the concord health and ageing in men project were assessed at baseline (n=1705), two (n=1366) and five years (n=954). The main outcome measurement was the incidence of sarcopenia defined as appendicular lean mass adjusted for body mass index < 0.789 and grip strength < 26.0 kg. Serum 25D and 1,25D levels were measured at baseline by radioimmunoassay (Diasorin, Stillwater, MN, USA) and categorized into quartiles as predictor variables. Covariates included age, income, season of blood collection, physical activity, vitamin D supplement and medication use, measures of health, serum parathyroid hormone (PTH), and estimated glomerular filtration rate (eGFR).

Findings: The incidence of sarcopenia was 9.2% in men in 2-year follow-up and 14.1% in 5-year follow-up. Vitamin D levels in the lowest quartiles (25D < 40 nmol/l; 1,25D < 62 pmol/l) were independently associated with the incidence of sarcopenia over 5 years after adjustment for potential confounders and covariates of clinical significance (25D: OR 2.52 (95% CI 1.13, 5.62) p=0.02, 1,25D: OR 2.70 (95% CI 1.29, 5.67) p=0.01).

Conclusion & Significance: Low serum 1,25D and 25D concentrations at baseline are independently associated with the incidence of sarcopenia over the subsequent 5 years. Although our data do not prove any causal relationship, it is conceivable that maintaining vitamin D sufficiency may reduce the incidence of sarcopenia in ageing men.

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