

Clinical Update

Low Vitamin D Levels Linked to Heart Disease

New study suggests that low vitamin D levels may increase cardiovascular events such as heart attack, heart failure or stroke by 62%

(*Circulation*, January 2008)

Interest in vitamin D has been increasing in recent months with an increasing number of studies linking the vitamin to protection against osteoporosis and certain cancers. There is also evidence that a higher intake of vitamin D may be helpful in preventing and treating high blood pressure, fibromyalgia, diabetes mellitus, multiple sclerosis and rheumatoid arthritis.

The researchers used data from the 1739 participants in the Framingham Offspring Study (average age 59 years, 55 per cent women, all Caucasian). None of the subjects had any heart health problems at the start of the study and the researchers used blood samples to measure levels of the 'storage' form of the vitamin, 25-dihydroxyvitamin D (25(OH)D).

Wang and co-workers found that 28 per cent of subjects had blood levels of 25(OH)D lower than 15 nanograms per millilitre (ng/mL). Over 5.4 years of follow-up, 120 people developed a cardiovascular event, and people with the lower vitamin D levels were 62 per cent more likely to develop these events than people with 25(OH)D levels over 15 ng/mL. Although levels above 30 ng/mL are considered optimal for bone metabolism, only 10 per cent of the participants had levels in this range.

People with low vitamin D levels and high blood pressure (hypertension), defined as having a systolic and diastolic blood pressure (BP) greater than 140 and 90 mmHg, were at an increased risk, were found to be at a 113 per cent increased risk than those with normal blood pressure and higher vitamin D levels.

Calls for raising the recommended daily allowance (RDA) of the vitamin have been growing after reports that higher intakes could protect against osteoporosis and certain cancers. Consumer awareness of these health links is also increasing with some outlets reporting massive boosts in sales.

Vitamin D refers to two biologically inactive precursors - D3, also known as cholecalciferol, and D2, also known as ergocalciferol. The former is produced in the skin on exposure to UVB radiation (290 to 320 nm). The latter is derived from plants and only enters the body via the diet, from consumption of foods such as oily fish, egg yolk and liver.

Recent studies have shown, however, that sunshine levels in some northern countries are so weak during the winter months that the body makes no vitamin D at all, leading some to estimate that over half of the population in such countries have insufficient or deficient levels of the vitamin. Moreover, increased skin pigmentation also reduces the effect of UVB radiation meaning darker skinned people are more at risk.

Both D3 and D2 precursors are hydroxylated in the liver and kidneys to form 25- hydroxyvitamin D (25(OH)D), the non-active 'storage' form, and 1,25-dihydroxyvitamin D (1,25(OH)2D), the biologically active form that is tightly controlled by the body.