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Vitamin D and Parathyroid Hormone Levels May Not Affect Cardiovascular Mortality

There is burgeoning public interest in possible wide-ranging health benefits from vitamin D, including cardiovascular health. In a study published in the December 2010 issue of The American Journal of Medicine, investigators found that there was no independent association between serum levels of vitamin D or parathyroid hormone and cardiovascular mortality in this prospective study, the first in a population of older community-dwelling adults with a low prevalence of vitamin D deficiency and a broad range of kidney function.

Researchers collected data from the Rancho Bernardo study, which was established in 1972. Between 1997 and 1999, 1091 participants attended a follow-up visit where blood samples were collected, along with detailed surveys of medical history, medications, cigarette smoking, alcohol consumption, and exercise; serum levels of 25-hydroxyvitamin D (25[OH]D) (mean 42 ng/mL), 1,25-dihydroxyvitamin D (1,25[OH]2D) (median 29 pg/mL), and intact parathyroid hormone (median 46 pg/mL) were measured; mean estimated Glomerular Filtration Rate (eGFR) was 74 mL/min/1.73 m2. Using data from 1073 participants who qualified for this study, these people were followed for a median of 6.8 years (maximum 10.7 years). During this period, there were 266 deaths, including 111 cardiovascular deaths. Of those 111, 71 had normal kidney function (eGFR > 60 mL/min/1.73 m2) and 40 had reduced kidney function (eGFR < 60 mL/min/1.73 m2).

In populations with chronic kidney disease, low levels of 25(OH)D and 1,25[OH]2D, and high levels of intact parathyroid hormone have been suggested to explain the association between chronic kidney disease and cardiovascular mortality. Even in people with intact kidney function, there are multiple mechanisms that could link Vitamin D and cardiovascular disease.

"To our knowledge, this is the first prospective study to investigate the role of serum 25[OH]D, 1,25[OH]2D, and intact parathyroid hormone in the prediction of cardiovascular mortality in a population of older community-dwelling adults with a low prevalence of vitamin D deficiency and a broad range of kidney function," commented Lead investigator Simerjot K. Jassal, MD, Division of General Internal Medicine and Geriatrics, Department of Medicine, University of California, San Diego, and VA San Diego Healthcare System, La Jolla.

Dr. Jassal continued, "After adjusting for age alone, there was no independent association between serum levels of 25(OH)D, 1,25(OH)2D, or intact parathyroid hormone and cardiovascular mortality. Prior published literature in community-dwelling adults suggests an increased risk of cardiovascular mortality only in individuals with vitamin D levels lower than levels observed here. Our null results may mean that only larger disruptions in levels of 25(OH)D and 1,25(OH)2D contribute to cardiovascular mortality. These null findings are also compatible with results from randomized clinical trials in which vitamin D supplementation has failed to prevent cardiovascular outcomes, although the doses of vitamin D in these trials may have been too low."

Simerjot K. Jassal, Michel Chonchol, Denise von Mühlen, Gerard Smits, Elizabeth Barrett-Connor. Vitamin D, Parathyroid Hormone, and Cardiovascular Mortality in Older Adults: The Rancho Bernardo Study. The American Journal of Medicine, 2010; DOI: 10.1016/j.amjmed.2010.07.013