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Vitamin D insufficiency in congestive heart failure: why and what to do about it?

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Abstract

This article gives an overview of the current knowledge on vitamin D status in patients with congestive heart failure (CHF). A serum 25-hydroxyvitamin D level below 50 nmol/l (20 ng/ml) is generally regarded as insufficient. Available data indicate that the majority of CHF patients have 25-hydroxyvitamin D levels in the insufficiency range. Skin synthesis of vitamin D after solar ultraviolet B exposure is the most important vitamin D source for humans. However, CHF patients have relatively low outdoor activities. Consequently, a disease-related sedentary lifestyle is an important cause for the insufficient vitamin D status in CHF patients. There is also evidence from a recently performed case-controlled study that indicators of ultraviolet B exposure are already reduced in CHF patients during childhood, adolescence, and early adulthood compared to healthy controls. We present results indicating that an insufficient vitamin D status may contribute to the etiology/pathogenesis of CHF. Data include a vitamin D-mediated reduction of elevated blood pressure as well as a vitamin D-mediated prevention of enhanced parathyroid hormone levels, a pathophysiological state that contributes to cardiovascular disease. Based on population attributable risks, hypertension and cardiovascular disease have a high impact, accounting for the majority of CHF events. Theoretically, vitamin D status can be improved by adequate skin synthesis of vitamin D and/or adequate oral vitamin D intake. At present, daily oral intake of 50-100 microg vitamin D seems to be the most effective way to improve vitamin D status in CHF patients.

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