

# Abstract

Nutr Metab Cardiovasc Dis. 2010 Nov;20(9):633-40.

## High prevalence of vitamin D deficiency and its association with left ventricular dilation: an echocardiography study in elderly patients with chronic heart failure.

Ameri P, Ronco D, Casu M, Denegri A, Bovio M, Menoni S, Ferone D, Murialdo G.

Department of Endocrinological and Medical Sciences, University of Genova, Genova, Italy.

**BACKGROUND AND AIMS:** Vitamin D deficiency has been associated with chronic heart failure (CHF). We evaluated vitamin D levels in relationship with New York Heart Association (NYHA) classes, N-terminal pro-brain natriuretic peptide (NT-proBNP) values and left ventricular (LV) measures in  $\geq 60$  year old patients with stable CHF. Differently from previous investigations, LV function was assessed by transthoracic echocardiography, to provide easily reproducible results.

**METHODS AND RESULTS:** The study was performed at geographic latitude  $44^\circ$  N, from March to May and from September to November 2008. Acute HF and diseases or drugs altering vitamin D status were exclusion criteria. NYHA scores and 25-hydroxyvitamin D [25(OH)D], 1,25-dihydroxyvitamin D and NT-proBNP concentrations were assessed in 90 (45 F, 45 M) Caucasian patients with CHF secondary to hypertension and/or coronary artery disease. Vitamin D levels were also measured in 31 subjects without heart disease (controls). LV echocardiography was performed in 52 (26 F, 26 M) representative patients. Vitamin D concentrations were significantly lower in CHF cases than in controls. Among subject with CHF, 97.8% presented vitamin D deficiency (25(OH)D $<$ 75 nmol/L), being severe ( $<$ 25 nmol/L) in 66.7%. LV end-diastolic and end-systolic diameters were significantly longer, LV end-diastolic and end-systolic volumes bigger and fractional shortening lower in CHF patients with 25(OH)D $<$ 25 nmol/L than with 25(OH)D $\geq$ 25 nmol/L ( $p$  $<$ 0.05). Log-values of 25(OH)D were negatively correlated with LV end-systolic diameter and volume ( $r$  $=$ -0.28;  $p$  $<$ 0.05). On subgroup analysis, these results persisted only in male patients.

**CONCLUSIONS:** In elderly CHF patients, vitamin D deficiency was highly prevalent and often severe. This first addressed echocardiography study showed a sex-specific association between vitamin D deficiency and LV dilation. Since further echocardiography data are easily obtainable, larger investigations are demanded.

PMID: 20399085