

## Association between calcium metabolism and arterial stiffness in asymptomatic postmenopausal women.

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**Context:** Cardiovascular disease (CVD) is one of the main causes of morbidity and mortality among postmenopausal women. Disorders in mineral metabolism have been related to a greater risk for cardiovascular events in patients with impaired renal function as well as in the general population.

**Objective:** We aimed to examine the association between indices of calcium metabolism and pulse wave velocity (PWV), a major non-invasive method of assessing arterial stiffness and a predictor of CVD mortality in postmenopausal women.

**Methods:** 433 healthy postmenopausal women (mean age 56.7) were included in the study. Inclusion criteria were 1) at least 1 year postmenopausal, 2) absence of clinically overt or treated coronary artery disease, peripheral artery disease or diabetes mellitus. We evaluated the association between serum calcium (Ca), phosphorus (P), magnesium (Mg), parathyroid hormone (PTH) and 25-hydroxyvitamin D levels, calcium-phosphorus (Ca-P) product and carotid-femoral pulse wave velocity (PWV).

**Results:** Phosphorus (r-coefficient=-0.122, p-value=0.023) and Ca-P product (r-coefficient=-0.126, p-value=0.021) correlated negatively with PWV while PTH (r-coefficient=0.153, p-value=0.022) was the only index with a positive association with PWV. The phosphorus levels as well as the Ca-P product were significantly lower in the group of women with PWV>8.5m/s, compared to the group of women with PWV<8.5m/s [(3.45±0.46) mg/dl vs. (3.58±0.50) mg/dl, p-value=0.013 and (32.9±4.7) vs. (34.2±5.1), p-value=0.031 respectively). In addition, after adjustment for age, systolic blood pressure, diastolic blood pressure, years since menopause, smoking, Ca-P product and PTH, the inverse association between Ca-P product and PWV remained statistically significant. No other significant associations were observed between indices of calcium metabolism and PWV.

**Conclusion:** Lower serum phosphorus levels and lower Ca-P product, even within the normal range, are significantly correlated with increased PWV among ambulatory postmenopausal women, while PTH is the only index with a positive correlation with PWV. The association between calcium metabolism and PWV still remain controversial and should be further assessed in prospective studies.

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