

Dietary Calcium Intake and Cardiovascular Health: Is There Any Relationship?

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Introduction: Calcium intake, recommended for osteoporosis prevention, has been associated with cardiovascular (CV) outcomes. We examined the association of dietary calcium intake (dCa) with surrogate CV markers, including carotid intima-media thickness (cIMT), arterial stiffness and hemodynamics in healthy postmenopausal women.

Methods: Healthy postmenopausal women without any CV risk factors, from a randomized controlled trial studying the effect of calcium supplementation vs. dietary calcium on vascular health, were recruited. Cross-sectional analyses of baseline data of the participants are presented. Peripheral systolic and diastolic blood pressures (pSBP, pDBP) were measured by BpTRU. cIMT of both common-carotid arteries was measured by B-mode ultrasonography (Philips-iU22). Arterial stiffness (carotid-to-femoral pulse wave velocity [cfPWV] and carotid-to-radial PWV), central SBP and DBP (cSBP, cDBP), mean arterial pressure (MAP), and hemodynamic parameters (pulse pressure, augmentation pressure, augmentation index corrected for 75 bpm) were obtained non-invasively (SphygmoCor). Usual dCa intake was estimated using a validated food frequency questionnaire. Measurements were compared across groups (<600, 600-1000 and >1000 mg/day of dCa) by one-way analysis of variance and covariance.

Results: We evaluated 83 postmenopausal women (mean age 60.4±6.3 years; BMI 25.6±3.8 kg/m²). Mean dCa was 857±333 mg/day. Although within normal range, vascular parameters had a non-significant, U-shaped relationship with dCa. In unadjusted analyses, women with dCa >1000 mg/day had significantly higher cfPWV, pSBP, cSBP, and MAP compared to those with 600-1000 mg/day; however, significance was lost for all other parameters except for MAP after adjustment for pertinent covariates (Table).

Conclusion: In healthy postmenopausal women, a non-significant, U-shaped relationship of vascular parameters across the 3 dCa groups was noted; dietary calcium may have favourable effect on MAP for those consuming 600-1000 mg/day compared to >1000 mg/day intake. Of note, our population had optimal/normal BP. Our ongoing study including a larger sample-size will determine the relationship between dCa and surrogate CV markers.