ABSTRACT

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

Shubhabrata Das1,2, Yessica-Haydee Gomez2, David Goltzman3, Angel M. Ong2,4, Yessica H. Gomez2, Jessica Gorgui5, Michelle Wall2, Suzanne N. Morin2,6, Stella S. Daskalopoulou1,2,6

1Division of Experimental Medicine, Department of Medicine, McGill University, Montreal, Canada; 2Cardiovascular Health Across Lifespan Program, Research Institute of the McGill University Health Centre, Montreal, Quebec McGill University Health Centre Research Institute, Montreal, Canada; 3Departments of Medicine and Physiology, McGill University, Montreal, Canada; 4School of Dietetics and Human Nutrition, McGill University, Sainte-Anne-de-Bellevue, Canada; 5School of Pharmaceutical Science, Faculty of Pharmacy, Université de Montréal, Montreal, Canada; 6Division of Internal Medicine, Department of Medicine, McGill University, Montreal, Canada

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.