Low Dietary Calcium Intake Raises Risk for Fracture and Osteoporosis

During 19 years, first fracture of any type was significantly more common among women with low daily dietary calcium intake (≤750 mg).

Observational studies and randomized trials of dietary or supplemental calcium to prevent fractures have yielded inconsistent results. In this prospective observational study, investigators determined the associations between dietary calcium intake and risk for any fracture among a population-based cohort of 61,000 Swedish women; risk for osteoporosis was evaluated in a randomly selected subcohort of 5000 women.

During a median 19-year follow-up, 24% of women experienced first fractures of any type, 6% suffered first hip fractures, and 20% developed osteoporosis. After adjustment for multiple variables, risk for first fracture of any type was significantly higher among women in the lowest dietary calcium–intake quintile (≤750 mg/day; hazard ratio, 1.2) than among women in the third (middle) quintile (882–996 mg/day). Similar results for the lowest versus the middle quintile were found for first hip fracture (HR, 1.3) and osteoporosis (HR, 1.5). Low vitamin D intake was associated with excess fracture risk. In contrast, women in the middle and highest (>1137 mg/day) quintiles had similar risks for fracture of any type and similar risks for osteoporosis, but those in the highest quintile exhibited excess risk for hip fracture (HR, 1.2). Of note, results were similar when total calcium intake (i.e., including supplements) instead of dietary calcium intake was evaluated.

Comment: In this study, higher-than-median intake of calcium did not lower risk for any fracture, hip fracture, or osteoporosis, which casts further doubt on the role of supplemental calcium in preventing these outcomes. Perhaps the most relevant finding was that low dietary calcium intake indeed was associated with excess risk for fracture and osteoporosis. The authors conclude that "in the prevention of osteoporotic fractures emphasis should be placed on individuals with a low intake of calcium rather than increasing the intake of those already consuming satisfactory amounts."

— *Paul S. Mueller, MD, MPH, FACP*

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