

Lower Doses of Vitamin D Can Prevent Bone Fractures in Older Women with Vitamin D Insufficiency

Written by Rita Buckley

The first dose response study on multiple doses of vitamin D shows that older Caucasian women need less vitamin D to prevent vitamin D insufficiency than previously thought. J. Christopher Gallagher, MD, Creighton University Medical Center, Omaha, Nebraska, USA, presented findings from the Vitamin D Response Study: Effect on Serum 25-Hydroxyvitamin D and Parathyroid Hormone trial, a randomized, double-blind, placebo-controlled trial that involved healthy Caucasian postmenopausal women.

Participants included 160 women aged 57 to 90 years who had been postmenopausal for at least 7 years and who had vitamin D insufficiency, defined by the World Health Organization (WHO) as serum 25OHD less than 20 ng/ml. Subjects were randomized in eight groups of 20 and to one of seven vitamin D doses—400, 800, 1600, 2400, 3200, 4000, and 4800 IU/day—or placebo. All were given calcium supplements to maintain a total intake of 1200–1400 mg/day, based on 7-day food diaries. Exclusion criteria included significant comorbidities or drugs that interfered with vitamin D metabolism. The primary outcomes of the study were serum 25OHD and parathyroid hormone (PTH) levels after 12 months.

The mean age of participants was 67 years, and mean dietary intake of vitamin D was 115 IU/day. Serum 25OHD and serum PTH were collected every 6 months—the former was measured by radioimmunoassay; the latter, by immunoradiometric assay. Analysis of the vitamin D dose response data showed that a quadratic model was the best fit to the change in serum 25OHD, and a linear model was the best fit for change in serum PTH.

Of the total participants, 89% completed the study, with 91% compliance for vitamin D. On 400 IU/day, all of the subjects exceeded a serum 25OHD greater than 20 ng/ml. On 1600 IU/day, 90% exceeded a serum 25OHD greater than 30 ng/ml. On higher doses of between 4000–8000 IU/day, mean serum 25OHD plateaued between 40–45 ng/ml. The absolute increase in mean serum 25OHD per 100 IU for participants on 400 IU/day was 5 times that for those on the 4800-IU/day dose. Hypercalcemia and hypercalciuria were the only adverse events: hypercalcemia >10.6 mg/dL occurred in 4 subjects, and hypercalciuria >400 mg/dL 24 hours occurred in 17 subjects. These events were unrelated to dose.

All women who received 400 IU/day of vitamin D had adequate mean serum levels of 25OHD; ie, in excess of 20 ng/ml. Most of the women in the group that received 1600 IU/day reached a mean serum level of 30 ng/ml.

Prior to this report, the recommended daily dose of vitamin D was based on clinical trials that were limited by the small number of doses that was studied. The outcomes from this dose response study in subjects with vitamin D insufficiency suggest that 400 IU/day of vitamin D corrects vitamin D insufficiency and can be used to supplement the normal intake of vitamin D as a Recommended Dietary Allowance for bone health in older women. This finding is consistent with the 2011 report from the Food Nutrition Board/Institute of Medicine, which defined 400 IU/day as adequate for bone health.

Laparoscopic Gastric Banding Can Lead to Significant Weight Loss in Morbidly Obese Adolescents

Written by Lori Alexander

Data from a study of morbidly obese adolescents show that significant weight loss is achievable in a large percentage of adolescents following laparoscopic gastric banding. In addition, significant metabolic improvement is likely when at least 20% of excess body weight is lost. Shulamit E. Lerner, MD, Columbia University Medical Center, New York, New York, USA, reported the results of the study.

The rate of severe childhood obesity has tripled in the past 25 years, which has profound implications for the early-adult onset of cardiovascular disease and diabetes. Dietary interventions have typically resulted in limited weight loss (up to 10% of total body weight), leaving surgical interventions as the best options for morbidly obese adolescents [Skelton JA et al. *Acad Pediatr* 2009]. With gastric bypass surgery the standard of care for this population, the frequency of laparoscopic gastric banding has increased since 2005 [Jen HC et al. *Pediatrics* 2010].

The aim of the study was to determine the preoperative anthropometric and metabolic parameters that predicted significant weight loss after banding and the metabolic outcomes that are associated with significant weight loss. The study involved 63 adolescents who were followed up for at least 1 year after surgery. Thirty-eight of the 63 (9 male and 29 female) subjects lost an average of 50.5% excess body weight (29.7 kg), and 25 (12 male and 13 female) subjects lost an average of 2.9% excess body weight (3.2 kg).