IDIS Independent Drug Information Service

PEARL:
Prompt Evidence Assessment and Review of the Literature

Do calcium supplements increase cardiovascular risk?

The clinical issue: Supplemental calcium reduces the risk of osteoporotic fractures,[1,2] and is very widely used. But in July 2010, a meta-analysis in the *British Medical Journal* reported that calcium supplementation may also increase the risk of myocardial infarction and other cardiovascular events.[3] These results have raised important questions about the safety of this mainstay of osteoporosis prevention and management.

The new evidence: Bolland and colleagues pooled data from 11 controlled trials involving almost 12,000 participants who were randomized to take calcium supplements or placebo. The trials were designed to evaluate bone mineral density and/or fracture, but also collected data on MI, stroke and death. Analyzing the pooled results to focus on cardiovascular outcomes found:

- Patients randomized to calcium had a statistically significant 27-31% increase in the relative risk of MI compared to those randomized to placebo (p = 0.04). The risk was greater in patients who had higher baseline levels of dietary calcium intake, and was absent in patients with lower dietary calcium intake.
- Calcium-treated patients also had higher rates of stroke (12-20%) and death (7-9%), but these differences were not statistically significant.

In contrast to the use of calcium supplements, higher intake of dietary calcium itself does not appear to increase the risk of cardiovascular events.[3] The meta-analysis did not include trials that compared combined calcium + vitamin D with placebo, but did include studies in which vitamin D was given to patients in both the calcium and placebo groups. In a large trial not included in the meta-analysis, a combination of calcium (1000 mg/d) and vitamin D (400 IU/d) did not appear to increase the risk of MI or stroke compared with placebo.[4]

What should we do with this information? This meta-analysis does not definitively establish that calcium supplements increase the risk of MI, but it raises important questions for osteoporosis prevention and management. Adequate calcium intake (1200 mg per day from all sources) modestly reduces the risk of fractures and continues to be recommended for people over 50. Along with existing data, the findings of this new meta-analysis suggest that it **may be safer for patients to achieve their daily calcium needs from dietary sources (such as diary products, some vegetables and fish) rather than from calcium supplements.** It also indicates that supplements may be more risky in patients who already consume a high-calcium diet. Because increased rates of cardiovascular disease were not seen in other studies that administered calcium along with Vitamin D, **if a calcium supplement is used it may be prudent to co-administer it with Vitamin D (400 - 1000 IU/day).**

References: 1. National Osteoporosis Foundation 2008. 2. Tang BM. Lancet 2007; 370:657. 3. Bolland MJ. BMJ 2010;341:c3691. 4. Hsia J. Circulation 2007;115:846.

This material was produced by Niteesh K. Choudhry, M.D., Ph.D., Assistant Professor of Medicine, Harvard Medical School and Danielle Scheurer, M.D., M.Sc., F.H.M., Assistant Professor of Medicine, Medical University of South Carolina, for the Independent Drug Information Service (iDiS). Additional information on the management of COPD is provided in the IDIS monograph, "Helping patients with chronic obstructive pulmonary disease to breathe a little easier," at www.RxFacts.org.

These are general recommendations only; specific clinical decisions should be made by the treating physician based on an individual patient's clinical condition.

The Alosa Foundation

The Independent Drug Information Service (IDIS) is supported by the PACE Program of the Department of Aging of the Commonwealth of Pennsylvania, and the Washington D.C. Department of Health. Publication of the PEARL series is made possible by a grant from the Rx Foundation. This material is provided by The Alosa Foundation, a nonprofit education organization which is not affiliated in any way with any pharmaceutical company. © 2012 The Alosa Foundation.