



August 14, 2010 – Oak Brook, IL

## Calcium and Heart Attacks

In the past couple of weeks, one study made big headlines: calcium supplements may increase the risk of heart attack. The articles contained interviews with the researchers and commentaries by medical experts. By the time I got done reading them, I was concerned that maybe calcium supplements weren't healthy. Fortunately, I was able to get a copy of the journal article and review it. Read on before you decide whether you want to take your calcium supplement or not.

### The Study

The researchers started with a question: does calcium intake from supplements increase the risk of heart attacks and death? (1). They were concerned because they had conducted a large clinical trial and found a slight increased risk of heart attacks in their subjects who took calcium supplements. They examined all of the research up to the date of the analysis and found 15 clinical trials that fit the guidelines they established for inclusion in the meta-analysis. Those guidelines required subjects who were older than 40, supplementation greater than 500 mg calcium per day, and no vitamin D intake with the calcium.

After the statistical analysis, they reported that the Hazard Ratio in five of the studies that included subject data indicated a 31% greater risk of myocardial infarction (a type of heart attack, abbreviated as MI) when compared with those who took placebos. In the remaining 11 studies, there was a 27% increased risk in those trials where subjects took calcium supplements versus the placebo group. That's what hit the news media: calcium supplements cause heart attacks. As always, there's more to this study than was reported.

### The Problems

I could write and write about what was wrong about this study. If you want to hear more, listen to my radio show *Straight Talk on Health* at 7 tomorrow night on WGVU-FM; you can even listen online—how cool is that? But for right now, I'll hit the main points of the study.

First, the researchers used a statistical technique called meta-analysis. It's not my favorite kind of study as I've said over and over again. The reason is that you're evaluating data you didn't collect that tried to answer questions you didn't ask. You're trying to make what others were thinking into what you're thinking. You may have noticed in the description above I talked about the studies that included subject data as well as trial data. What that means is that they had access to every subject's data from five of the trials. In the rest of the 11 studies, they only had access to the published data. That means they had summary data—means and standard deviations, not the actual numbers. In that some studies had as few as 68 subjects and some as many as 1,300, that could be a problem—you can weight things any way you want, but you haven't seen the actual data. While statisticians may disagree, that means they didn't have really have 12,000 subjects that were in the actual trials. They had 11 subjects—one for each clinical trial.

Second, it's hard to say why they would do the study in the first place. They summarized every study they included: number of subjects, number of heart attacks, strokes, death, etc. When you look at those summaries, it's apparent that only two studies really showed any real increase in risk of MI—including a study by one of the authors of the meta-analysis. What struck me was this: what was different in the large studies compared to the smaller studies?

Finally, and this is really the main flaw: they excluded every clinical trial that combined calcium with vitamin D. There's no question that vitamin D is integral to the absorption of calcium. It's really hard to understand why anyone would do a study without including both nutrients if you're looking at improving bone density—which was the primary purpose of those clinical trials. The authors know that—they've done clinical trials on vitamin D themselves. It would have been better if they had analyzed studies that used calcium and vitamin D compared to just calcium alone. At least that could have painted a more accurate picture of calcium and its role in heart attacks.

## The Bottom Line

Here's the rest of the story. Only when the supplementation with only calcium exceeded 800 mg per day did the risk increase substantially. That's not all. The data indicated that women in their 70s were most at risk. It may mean that at some point, other as-yet-unknown factors may contribute to heart attacks in some women over 70 who take over 800 mg of calcium per day *without* additional vitamin D or magnesium.

The message for us? Just to be safe, don't take large amounts of *only* calcium until we know more; take your calcium with vitamin D and magnesium. If you're taking a calcium supplement that contains vitamin D and magnesium to keep your bones strong, there's no reason to stop doing it based on this research paper. The researchers suggest more research needs to be done. I agree, but I don't think they're the ones who should do it.

What are you prepared to do today?

**Dr. Chet**

Reference: BMJ 2010;341:c3691 doi:10.1136/bmj.c3691

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