

# Low Vitamin D May Elevate Risk for Hypertension

BY MITCHEL L. ZOLER  
Philadelphia Bureau

NEW YORK — People with low serum levels of vitamin D have an increased risk of developing hypertension, based on the results from two prospective studies, one of which included more than 38,000 men.

On the basis on both analyses, “we conclude that serum levels of 25-hydroxy vitamin D may be an independent risk factor for incident hypertension,” Dr. John P. Forman said at the annual meeting of the American Society for Hypertension.

The findings also suggested that people could probably substantially reduce their risk by boosting their sun exposure through an extra 30-60 minutes spent outdoors daily, said Dr. Forman, a nephrologist at Brigham and Women’s Hospital in Boston.

“Diet contributes relatively little to vitamin D levels, compared with sun exposure,” said Dr. Forman. A typical multivitamin contains 200-400 IU of vitamin D. In contrast, an extra 30-60 minutes of sun exposure to the face and arms can generate 4,000 IU of vitamin D, although this relationship varies based on latitude and time of year. (Endogenous vitamin D production is minimal for people in the northern latitudes of the United States during the late fall and winter.)

Vitamin D deficiency has been hypothesized to cause hypertension based on epidemiologic studies that have shown that the further a population lives from the equator the higher the prevalence of hypertension. And mechanistic links exist: Active vitamin D suppresses renin expression in the juxtaglomerular apparatus, and vitamin D also inhibits the growth of vascular smooth muscle cells.

Both analyses used data collected from men enrolled in the Health Professionals Follow-up Study, which began



Hypertension risk can be reduced by spending an extra 30-60 minutes in the sun each day, findings suggest.

in 1986. The first analysis focused on serum vitamin D levels measured from single blood samples drawn from 621 men who were normotensive at the time of their blood draw.

These men had served as controls for a previous study that examined the possible link between vitamin D levels and the incidence of certain cancers.

In a multivariate analysis that controlled for a variety of demographic and clinical factors, including age, race, family history of hypertension, smoking, and alcohol intake, men with vitamin D deficiency (defined as a serum level of less than 15 ng/mL) had a statistically significant,

5.6-fold increased risk of developing hypertension over the subsequent 4 years, compared with men whose baseline vitamin D level was 15 ng/mL or greater.

During 8 years of follow-up, men with a baseline deficiency had a threefold increased risk of developing hypertension, although this difference was not statistically significant.

This analysis was limited by the relatively small number of men involved and because the reference vitamin D level was based on a single blood draw. Therefore, Dr. Forman and his associates ran a second analysis, based on data collected on all 38,388 men in the overall study.

Blood samples were not available for all of these men, but other available information allowed the researchers to estimate the subjects’ serum level of vitamin D at baseline, using factors such as residence location, body mass index, and reported level of physical activity.

The estimated vitamin D levels at baseline were correlated with the incidence of hypertension during the follow-up period, with adjustment for demographic and clinical variables.

The analysis showed that men in the lowest decile for vitamin D had a 2.3-fold increased risk of new-onset hypertension, compared with men in the highest decile.

The relationship between vitamin D and hypertension was biphasic. The relative risk gradually rose from the decile with the highest vitamin D level to a risk that was about 60% increased for the eighth decile. The risk then increased sharply for the two deciles with the lowest vitamin D levels. ■

## CLINICAL CAPSULES

### Policosanol Did Not Improve Lipids

The supplement policosanol, which is touted for its lipid-lowering effects and is popular worldwide, did not lower lipids appreciably in a multicenter, randomized clinical trial, reported Dr. Heiner K. Berthold and associates at the University of Cologne, Germany.

Dozens of studies have reported that policosanol, a mixture of long-chain primary alcohols derived primarily from sugar cane wax, lowers LDL cholesterol as effectively as do statins, without side effects. But “virtually all of the published scientific literature supporting the beneficial effects of policosanol on lipids has been authored by a single research group from Cuba,” they wrote.

Almost all of these studies were funded by “a commercial enterprise founded by the Center of Natural Products” in Cuba to market Cuban policosanol. “Our trial is the first study to investigate sugar cane-derived policosanol independently from [this] research group but still using Cuban policosanol,” they said (*JAMA* 2006;295: 2262-9).

Dr. Berthold and colleagues randomly assigned 129 hypercholesterolemic patients at 14 clinical centers in Germany to one of five groups, to receive 10, 20, 40, or 80 mg of policosanol or placebo daily for 12 weeks. The usual recommended doses are 10 and 20 mg/d. All the patients were white; their mean age was 56 years, and their mean LDL cholesterol level was 187 mg/dL at baseline.

Policosanol did not decrease LDL cholesterol at any dose, beyond the small (less than 10%) reduction noted with placebo. Policosanol also had no appreciable effect on total cholesterol, HDL cholesterol, very-low-density lipoprotein cholesterol, triglycerides, or lipoprotein (a).

“A considerable health-food-store and Internet market has extended the development of nonprescription policosanol, and worldwide sales are constantly increasing,” they noted, calling for other independent studies of policosanol’s purported efficacy to counterbalance the vast body of available positive trials.

### Diabetics Benefit From Statins

Lipid-lowering agents, particularly statins, significantly reduce cardiovascular risk in people with diabetes, to the extent that these patients may benefit from the drugs even more than nondiabetics do, said Dr. João Costa of the University of Lisbon and associates.

They conducted a metaanalysis of 12 large studies that addressed lipid-lowering treatments and also included diabetic patients in all treatment arms.

Lipid-lowering drugs were equally effective in diabetic and nondiabetic patients for primary prevention. The use of statins or gemfibrozil reduced the risk of a first major coronary event by 21% in diabetic patients and by 23% in nondiabetics. The results were similar for secondary prevention, except that diabetic patients benefited more than did nondiabetics.

The use of statins or gemfibrozil reduced the risk of coronary artery disease death, nonfatal MI, revascularization procedures, and stroke to a greater degree in diabetic patients than it did in nondiabetic patients.

The magnitude of change in blood lipids for diabetic patients was comparable to that for nondiabetics. “Most trials showed a decrease of 15%-20% in total cholesterol and increases of 5%-7.5% in HDL cholesterol,” the investigators said (*BMJ* 2006 April 3 [Epub doi:10.1136/bmj.38793.468449.AE]).

“Our metaanalysis clearly confirms that reduction of LDL cholesterol concentrations results in an important decrease in major coronary events in diabetic patients and shows similar relative risk reductions and odds ratios for ... diabetic and nondiabetic patients ... in primary and secondary prevention. However, the absolute risk difference was three times higher in secondary prevention, reflecting the higher baseline cardiovascular risk of [diabetic] patients,” they noted. Despite the well-documented benefits of statins, “they are not being optimally used in patients at higher risk—the ones most likely to benefit.”

A recent cohort study of nearly 400,000 patients over age 65 showed that only 19% of those with a history of diabetes or cardiovascular disease were prescribed statins, Dr. Costa and associates added.

“Our results support the use of statins not only for secondary prevention but also for primary prevention in [diabetic] patients,” they said.

### Statins May Decrease Cataract Risk

Statins, particularly simvastatin, appear to lower the risk of nuclear cataracts, the most common type of age-related cataracts, results of a large, prospective study suggest.

Both oxidative stress and inflammation have been posited as contributors to age-related cataracts, especially nuclear cataracts, and statin therapy is known to counter both effects, wrote study investigators Dr. Barbara E. Klein and her associates at the University of Wisconsin, Madison.

The investigators used data from the Beaver Dam Eye Study, a longitudinal community survey of eye health in which subjects have been examined every 5 years since 1987-1988, to assess whether the use of statins for cardiovascular indications affected the development of cataracts.

Of 1,299 subjects evaluated in the latest follow-up exam, 210 had developed nuclear cataracts since the previous follow-up. The incidence of cataracts was significantly lower in subjects who took statins than in those who didn’t (12% vs. 17%), the researchers said (*JAMA* 2006;295:2752-8).

Compared with those who didn’t take statins, subjects who took simvastatin had an odds ratio of 0.28 for developing nuclear cataracts, those who took atorvastatin had an odds ratio of 0.73, and those who took all other statins had an odds ratio of 0.67. Both the duration of statin use and the drug dosage may influence the protective effect against cataracts, but this study was not designed to assess either factor, the researchers noted.

—Mary Ann Moon