Dynamic Chiropractic

VITAMINS / SUPPLEMENTS

Therapeutic Update on Vitamin D and Related Substances

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Vitamin D, or cholecalciferol, has long been considered a nutrient of narrow scope in therapeutic nutrition. This article will include an update on the latest information regarding the classical role and therapeutic indications for vitamin D. Recent evidence however suggests a wider variety of applications for its use than previously suspected; this will be addressed as well.

Chiropractic students learn that the primary function of Vitamin D is to maintain calcium balance in the body. This is accomplished by optimizing the absorption of calcium from the intestinal tract to increase serum calcium levels when necessary. If the diet is low in calcium or if large doses of vitamin D supplements are taken, then the calcium reservoir in the bones will be depleted in order to raise serum calcium levels. This is the reason why vitamin D is one of the few nutrients with potential for toxicity. Not only can significant bone loss result from vitamin D intake above 1,000 IU/day, but renal calcification and stone formation may result as well. Recently, it has been reported that lax regulation of milk fortification practices by the dairy industry may result in potentially hazardous overfortification of milk in some areas.

While it is rare to see a patient with acute vitamin D deficiency (rickets or osteomalacia) in general practice today, substandard vitamin D status is considered a significant risk factor for the development of osteoporosis. Normally, vitamin D can be obtained without any contribution from the diet through the exposure of the skin to ultraviolet light. Exposure of the face and hands to unfiltered sunlight for 30 minutes per day is said to be adequate. In addition, many common dietary staples such as milk, fatty fish, eggs, and fortified breakfast cereals are excellent sources of dietary vitamin D.

The patient at risk for vitamin D insufficiency might be identified by the presence of several of the following risk factors: irregular exposure to strong sunlight; heavily pigmented skin; regular use of topical sunscreens; strict vegetarian/whole foods diet; fat malabsorption syndromes; and use of any of several kinds of medications (used to treat epilepsy, infection, and other diseases) which reduce vitamin D availability.

Some patients may have difficulty converting natural vitamin D into the active vitamin D hormone (calcitriol): this would include those with kidney disease, diabetes and some with osteoporosis. It is known that elderly persons produce only one-half of the normal amount of calcitriol, which often results in subnormal blood levels of this hormone. These patients may require prescription calcitriol to avoid rapid bone loss as they continue to age.

Elderly patients should be guaranteed an adequate supply of vitamin D through diet, sunlight exposure, or supplementation (at least 400 IU/day, thus ensuring them against vitamin D deficiency that could contribute to calcium imbalance and bone loss. Those with a high risk for excessive bone loss should probably have serum calcitriol levels checked after normalizing their intake to see if there is a conversion problem.

Patients with established osteoporosis should also be guaranteed an adequate supply of vitamin D.

The possibility of a defect in the conversion to calcitriol should be explored if lifetime fracture risk is significant. These patients should also have serum calcitriol levels checked. If levels are low, referral for low-dose vitamin D hormone therapy should be considered. Using large amounts of vitamin D (1,000 IU/day) to offset impaired conversion has been suggested but is not proven to be useful in osteoporosis. The use of calcitriol in osteoporotic patients has been shown to significantly improve calcium balance and reduce vertebral fracture rate.

The presence of vitamin D hormone receptors in tissues which are not involved in calcium balance suggests that there are other roles for vitamin D in the human body. For example, cancer cells appear to be inhibited by vitamin D and animal studies have shown reduced tumor incidence with higher intakes of vitamin D. Prevention of colon cancer in humans has been suggested by population studies showing more colon cancer incidence and deaths in individuals who live in northern latitudes with weaker sunlight, or have low serum vitamin D levels, or consume less than 150 IU/day of dietary vitamin D. Researchers suggest that the average daily intake of vitamin D by U.S. citizens is too low to afford maximum potential protection against colon and, perhaps, other cancers. A guarantee of at least the adult RDA of 200 IU/day, with adequate calcium as well, is recommended.

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