

Vitamin D Improves Mood and Lowers Blood Pressure in Type 2 Diabetics with Signs of Depression

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Studies have shown that Vitamin D supplementation has the potential to improve mood, blood sugar control and blood pressure regulation. These are important factors in diabetics, as high blood sugar and high blood pressure are frequent findings (1,2). Women with Type 2 diabetes tend to have worse outcomes than men. This has been linked to depression to some degree, which affects 25% of women with diabetes. In turn, depression often results in lack of compliance with proper diet, exercise, and medication use, which help control the disease and reduce risk of diabetic complications such as heart disease, kidney failure and stroke (3).

Approximately 1 in 10 people in the United States has diabetes, and the incidence is projected to increase to 1 in 4 persons by 2050 (3).

Many Americans do not get enough Vitamin D, and people with diabetes are at especially high risk for Vitamin D insufficiency or deficiency. Reasons include limited intake of foods high in Vitamin D, obesity (increased Vitamin D stored in fat tissue, rather than in circulation), lack of sun exposure, genetic variations and the inflammatory state induced by the disease. Vitamin D status is typically low in patients with chronic inflammatory states (e.g. autoimmune disease, diabetes, cancer). Studies have shown that Vitamin D supplementation provided to diabetics can reduce inflammation, improve blood sugar control (by improving insulin receptor activity secondary to a reduced inflammatory state, and by increasing insulin secretion from the pancreas), and increase blood Vitamin D levels into the desirable range (1,3). Previous studies have accomplished this by providing diabetics with a daily dosage of 4000 IU of Vitamin D over many months (2).

A recent pilot study by Sue M. Penckofer, PhD, RN et al, included 46 Type 2 diabetic women (average age 55 years). These women had diabetes for an average of 8 years and also showed low blood levels of Vitamin D (18 ng/ml). They were given a weekly dose (50,000 International Units) of Vitamin D.

After six months, their Vitamin D blood levels rose to an average level of 38 ng/ml, which is in the desirable range. There was also objective evidence of improved mood, as indicated by a 20-question depression symptom survey. Scores decreased from 26.8 at the beginning of the study (indicating moderate depression) to 12.2 at six months (indicating no depression.) (The depression scale ranged from 0 to 60, with higher numbers indicating more symptoms of depression.)

Blood pressure also improved, with the systolic pressure decreasing from 140.4 mm Hg to 132.5 mm Hg. There was also a small reduction in body weight, which dropped from an average of 226.1 pounds to 223.6 pounds (3).

Summary

Vitamin D status is emerging as an important variable in diabetes management. Health practitioners treating diabetic patients, and those with metabolic syndrome, should routinely examine blood levels of Vitamin D in these patients. If Vitamin D levels are low, it would prudent to provide these patients with sufficient Vitamin D supplementation to achieve blood levels in the desirable range. The desirable range for Vitamin D (25-hydroxycholecalciferol) is reported to be above 35 ng/ml or 90 nmol/L (4). A daily dosage of 4000 IU per day appears to be a safe and reasonable dosage to start with, according to previous studies. Clinical studies show that Vitamin

D supplementation in these cases has the potential to improve diabetic management by increasing insulin sensitivity, insulin secretion, reducing the inflammatory state associated with the diabetes, improving immune function, lowering blood pressure, and elevating mood, which may improve patient compliance with lifestyle recommendations and medication use.

References:

1. Sung CC, Liao MT, Lu KC, Wu CC. Role of Vitamin D in insulin resistance: Review article. Journal of Biomedicine and Biotechnology. 2012. (Hindawi Publishing Corporation)
<http://www.hindawi.com/journals/bmri/2012/634195>
2. Belanchia, AM, Tosh AK, Hillman LS and Peterson CA. Correcting Vitamin D insufficiency improves insulin sensitivity in obese adolescents: a randomized controlled trial. Am J Clin Nutr. 2013. **050013**
3. Loyola University Health System (2013, June 25). Vitamin D improves mood and blood pressure in women with diabetes.
<http://www.newswise.com/articles/vitamin-d-improves-mood-and-blood-pressure-in-women-with-diabetes>
4. Moyad MA. Vitamin D: A rapid review. Dermatology Nursing. 2009;21(1).
http://www.medscape.com/viewarticle/589256_7