

Low Vitamin D Exacerbates Inflammatory Bowel Disease

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ORLANDO, Florida — The link between vitamin D and inflammatory bowel disease was strengthened by 2 studies reported here at Digestive Disease Week 2013.

In a study by American researchers, vitamin D deficiency was associated with increased hospitalization and surgery related to inflammatory bowel disease.

In a separate randomized prospective trial, Irish researchers report that vitamin D supplementation can improve muscle strength and fatigue in patients with Crohn's disease.

"Low plasma 25-hydroxy vitamin D was associated with an increased risk of surgery and hospitalization in inflammatory bowel disease, primarily Crohn's disease," said Ashwin Ananthakrishnan, MD, from Massachusetts General Hospital in Boston.

Considerable evidence supports a role for vitamin D in inflammatory bowel disease, Dr. Ananthakrishnan pointed out during his presentation at the Presidential Plenary Symposium. "In animal models, deficiency of vitamin D increases susceptibility to colitis, but administration of active drug ameliorates inflammation."

"We have previously shown that low levels of vitamin D increase a person's risk for Crohn's disease," said Dr. Ananthakrishnan.

He noted that although some previous studies suggested an association between vitamin D and disease activity, they had design flaws. One randomized controlled trial by a group in Denmark showed a nonsignificant trend toward fewer relapses with vitamin D supplementation in Crohn's disease (*Aliment Pharmacol Ther.* 2010;32:377-383).

To better elucidate the association, Dr. Ananthakrishnan and his team identified 3217 patients with Crohn's disease or ulcerative colitis who had at least 1 measured plasma 25-hydroxy vitamin D level, and classified their vitamin D status as sufficient (≥ 75 nmol/L), insufficient (50 to 75 nmol/L), or deficient (< 50 nmol/L).

The study's main outcomes were the occurrence of the first surgery or hospitalization related to inflammatory bowel disease.

"Vitamin D status was found to be sufficient for 40%, insufficient for 28%, and deficient for 32%," Dr. Ananthakrishnan reported. Low levels were related to higher rates of hospitalization and surgery.

Table 1. Adjusted Odds Ratio for Hospitalization by Vitamin D Status

Disease	Sufficient	Insufficient	Deficient
Crohn's	1.0	1.56	2.07
Ulcerative colitis	1.0	1.18	2.26

Table 2. Surgery Rate by Vitamin D Status, %

Disease	Sufficient	Insufficient	Deficient
Crohn's	13	21	24
Ulcerative colitis	10	12	17

"Patients with Crohn's disease who normalized their vitamin D had a lower risk for subsequent surgery than those who remained deficient," Dr. Ananthakrishnan reported. Among patients with at least 2 measures of 25-hydroxy vitamin D prior to either surgery or the end of follow-up, 75% of the patients with Crohn's disease normalized, as did 80% of the patients with ulcerative colitis.

Table 3. Adjusted Odds Ratio for Effect of Vitamin D Normalization on Outcome

Disease	Surgery	Hospitalization
Crohn's disease	0.56	0.78
Ulcerative colitis	0.75	0.78

In a separate study, researchers showed, for the first time, the "potential benefits of vitamin D supplementation on muscle strength, with corresponding benefits for fatigue and quality of life in Crohn's disease," said Tara Raftery, a PhD candidate from Trinity College, Dublin, Ireland.

In the double-blind placebo-controlled study of 27 patients, those who took 2000 IU of vitamin D per day for 3 months gained muscle strength.

In addition, by 3 months, levels of serum 25-hydroxy vitamin D had increased significantly in the treated group (69.2 to 91.6 nmol/L; $P = .002$) and decreased in the control group (51.8 to 40.4 nmol/L; $P = .021$), she reported.

At 3 months, patients with vitamin D levels of at least 75 nmol/L had a significantly better quality of life than patients with levels below 75 nmol/L ($P < .0001$), Raftery said.

In addition, patients with serum vitamin D levels of at least 75 nmol/L had significant improvements on the bowel ($P = .015$) and social domains ($P = .05$) of the Inflammatory Bowel Disease Questionnaire, compared with those with lower levels of serum vitamin D. They also had significantly less fatigue ($P = .032$).

The patients with the lowest vitamin D levels at baseline had the most improvement after correction, Raftery noted.

Lawrence Friedman, MD, chair of medicine at the Newton–Wellesley Hospital in Massachusetts, who is also DDW council chair, said both studies are clinically relevant.

"With vitamin D now being recognized as so prevalent, not only in patients with inflammatory bowel disease, but also in the general population, physicians are frequently testing patients for levels and prescribing supplementation," he told *Medscape Medical News*. "This needs further study to determine whether there is a cause-and-effect situation, and to determine the optimal approach to supplementation. But, to me, the data are out there and physicians" should be considering supplementation in the inflammatory bowel disease population.

Dr. Ananthakrishnan, Ms. Raftery, and Dr. Friedman have disclosed no relevant financial relationships.

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