Low Vitamin D Can Mask Hyperparathyroidism

Ever since food began to be fortified with vitamin D, the manifestations of pHPT have become less severe.

B Y J E F F E V A N S  
Senior Writer

A R L I N G T O N , V . A . - A level of vitamin D that is low but near or within the normal range may mask the presentation of patients with primary hyperparathyroidism, Dr. Shonni J. Silverberg reported at a conference sponsored by the American Society for Bone and Mineral Research.

In the United States, the presentation and epidemiology of primary hyperparathyroidism (pHPT) and vitamin D deficiency have developed concomitantly since food began to be fortified with vitamin D about 75 years ago. During this period, the prevalence of vitamin D deficiency has declined dramatically while the clinical manifestations of pHPT have become less severe. Symptomatic pHPT, or osteitis fibrosa cystica, has decreased because of lower levels of parathyroid hormone (PTH) in the disease. The weight and size of parathyroid adenomas also has declined substantially during this period, Dr. Silverberg, professor of clinical medicine at Columbia University in New York.

“The question [was] whether or not calcium and vitamin D nutrition affects clinical expression of tumor growth in primary hyperparathyroidism. There has been a long a hypothesis of ‘double trouble,’ which states that the clinical manifestations of primary hyperparathyroidism may be more severe in the presence of vitamin D deficiency,” she said.

Epidemiologic data show that classical pHPT still exists in areas of the world where vitamin D deficiency is endemic. When one analyzes the relationship between the two conditions in the United States, it becomes clear where vitamin D deficiency is endemic, vitamin D (25-hydroxyvitamin D) levels are “somewhat inversely proportional” to the degree of PTH elevation, according to Dr. Silverberg. In this situation, people with very low vitamin D levels and pHPT may have PTH levels 15-20 times the upper limit of normal, but those with higher vitamin D levels—while still being in the lower range of normal—and pHPT may have PTH levels 1.5-2 times the upper limit of normal. However, some patients with hypothyroidism (pHPT) sufficient—but still low normal—levels of vitamin D oppose the hypercalcemic effect of excess PTH and thereby lower serum calcium levels and urinary calcium excretion back to their normal ranges.

Many of these people may be referred from doctors in the community who are reluctant to make a diagnosis of pHPT in patients with an elevated PTH level, normal serum calcium level, and a sufficient level of vitamin D, Dr. Silverberg said.

A study of women in New York and Beijing found that nearly all New Yorkers with pHPT were asymptomatic, whereas 94% of women with pHPT in China had fractures and severe bone disease. There were very marked differences in serum levels of calcium, PTH, and vitamin D levels between women in the two cities (Int. J. Fertil. Womens Med. 2000;45:385-9).

In a study of 49 patients in Saudi Arabia (where vitamin D deficiency is endemic) who underwent a parathyroidectomy for pHPT, 19 patients had severe bone disease. These 19 patients had high levels of PTH and alkaline phosphatase, and increased thyroid gland size and weight, but their vitamin D levels were not significantly different from those without severe bone disease. The study investigators concluded that marked vitamin D deficiency may play a part in osteitis fibrosa cystica, but manifestation of bone disease with pHPT is multifactorial (J. Clin. Endocrinol. Metab. 2000;85:3541-3).

The surgical literature shows that after patients with pHPT undergo a parathyroidectomy, a substantial percentage of patients have persistently elevated PTH levels despite others signs of being cured of the disease. The most consistent finding across these studies is low vitamin D levels either just before or immediately after surgery. In this case, pHPT has become secondary HPT, she noted.

One small study of vitamin D repletion in patients with pHPT did not provide conclusive results. In a study of 229 patients with osteoporosis, 15 had low vitamin D levels and concomitant high PTH levels (J. Clin. Endocrinol. Metab. 2000;85:3541-3). After a single treatment of 500,000 U of vitamin D3, five patients still had elevated PTH levels and were presumed to have pHPT. But two of those five patients had serum calcium levels less than 9 mg/dL, “which certainly rules out secondary HPT,” she said. Further discussion of the diagnosis, Dr. Silverberg said.

In those five patients, the bone mineral density after 13 months had increased by 6% in the spine and 8% in the hip. Although the investigators concluded that the increase in BMD resulted from the effect of vitamin D on pHPT, the patients’ calcium levels made the diagnosis of pHPT questionable, she said.

Little Support for Adding T₃ to T₄ Therapy for Hypothyroidism

B Y S H E R R Y B O S C H E R T  
San Francisco Bureau

S A N F R A N C I S C O — The scientific evidence does not support adding T₃ therapy to T₄ therapy for patients with hypothyroidism, but the number of patients taking one or another of these treatments, according to Dr. Hossein Gharib.

Most patients do well on T₄ therapy alone, but some complain of fatigue, low energy, weight gain, or depressed mood despite adequate thyroid hormone replacement on T₄ therapy. They may read on the Internet that some patients with hypothyroidism or their treating psychiatrists report mood improvements after adding T₃ to their therapy. But Dr. Gharib, professor of medicine at the Mayo Medical School, Rochester, Minn.

Data from thyroid clinics and endocrinology practices, however, do not show any physiologic benefit from adding T₃ to their therapy, he said. “There are several good studies in the last 5 years that have looked at this, and none of them support a physiologic response,” he said.

Adding T₃ to therapy increases the cost of care and requires additional monitoring of hormone levels. If the patient insists on trying it, and thyroid hormone levels are in normal ranges, Dr. Gharib documents the conversation and adds T₃ to the therapy. When adding T₃ to T₄, he added, the dose of T₄ should be lowered by about 20%.

Conventional treatment for hypothyroidism calls for individualized dosing of T₄ therapy (based on body size and hormone levels) to reach a target TSH level of 0.3-3.0 mIU/L.

Ask patients who complain about symptoms of hypothyroidism after years of successful T₄ therapy about several possible changes in their habits that may be responsible. Dr. Gharib suggested. The patient may have become less adherent to therapy, or a pharmacist may have convinced the patient to switch to less expensive generic T₄ therapy. Alternatively, the patient may be taking one of an increasing number of drugs that necessitate a boost in T₄ dosage. Calcium and ferrous sulfate are common inhibitors of T₄ bioavailability, “so keep these two agents at different schedules than thyroxine,” he advised.

Dr. Gharib indicated no association with the companies that make the treatments he discussed. Ots. Gen. News is published by the International Medical News Group, a division of Elsevier.