Gastritis Patient Needs Increased Thyroxine Dose

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Patients with multinodular goiter required a thyroxine dosage increase of 22%-34% if they had impaired secretion of stomach acids, results from a large controlled study demonstrated.

The finding suggests that "normal gastric acid secretion is important for the subsequent intestinal absorption of thyroxine," wrote the researchers, who were led by Dr. Marco Centanni, of the department of experimental medicine and pathology at La Sapienza University, Rome.

"Although the clinical importance of these findings is fairly clear, the mechanism by which intestinal absorption of thyroxine is impaired in patients with hypochlorhydria is unknown. We may only speculate that oral thyroxine is administered as sodium salt that is less lipophilic than the native hormone, which enters target cells both through passive diffusion and in a carrier-mediated, inhibitable way. In this respect, achlorhydria due to atrophic gastritis, the production of ammonia, or both, which are characteristic of [*Helicobacter*] *pylori* infection, may alter the ionization status and the conformational characteristics of the thyroxine molecule and thus the efficiency of intestinal absorption of the hormone."

The median thyroxine dose required for the 60 patients with atrophic gastritis was 125 mcg/day, a 27% median increase from the referent group.

Dr. Centanni and his associates studied 248 patients with nontoxic multinodular goiter who were seen at a referral center between 1999 and 2004. Of the 248 patients, 53 also had *H. pylori*–related gastritis and 60 had atrophic gastritis of the body of the stomach (31 with evidence of *H. pylori* infection and 29 without such evidence). The remaining 135 patients had no gastric disorders and served as the reference group (N. Engl. J. Med. 2006;354:1787-95).

All patients received an initial thyroxine dose of 50 mcg/day and were followed for at least 30 months. The researchers evaluated the thyroid-pituitary axis every 4 months and, if needed, increased the thyroxine dose until a low serum thyrotropin level was achieved on at least two consecutive measurements. The serum thyrotropin level was considered low if it was between 0.05 and 0.20 mU/L.

The researchers also studied the levels of serum thyrotropin in 11 women diagnosed with *H. pylori* infection 4-19 months after the study began, and in 10 women diagnosed with gastroesophageal reflux disease. These 10 women were given omeprazole along with thyroxine. Serum thyrotropin levels continued to be measured after treatment with omeprazole began.

Compared with patients in the reference group, all patients who had impaired secretion of gastric acid required statistically significant increases in their daily doses of thyroxine in order to achieve low levels of serum thyrotropin. The median thyroxine dose required of the 53 patients with *H. pylori*–related gastritis was 125 mcg/day, which was a 22% median increase from that of the referent group.

The median thyroxine dose required of the 60 patients with atrophic gastritis of the body of the stomach also was 125 mcg/day, which was a 27% median increase from that of the referent group. (Those with evidence of *H. pylori* infection required a median thyroxine dose of 150 mcg/day, a median increase of 34% from that of the referent group, while those without such evidence required a median thyroxine dose of 125 mcg/day, a median increase of 24% from that of the referent group.)

Serum thyrotropin levels rose variably in the cohort of 11 women with newly diagnosed *H. pylori* infection.

"In some patients, a slightly higher dose of thyroxine was needed to restore thyrotropin suppression," the researchers wrote. "Likewise, the increase in the level of serum thyrotropin was variable in patients treated with omeprazole, although the suppressive effect of thyroxine on thyrotropin disappeared in all patients and was restored only at a substantially higher dose of thyroxine."

The authors noted that the reversible effect of omeprazole "further supports the hypothesis that normal gastric acid secretion is necessary for effective intestinal absorption of thyroxine." ■