

Clinical Update

Bacterial Overgrowth is Linked to Nutritional Deficiencies

Data suggest gastric bypass patients have reduced micronutrient absorption from altered gut ecology

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Data reported at the 2007 annual meeting of the American College of Gastroenterology (ACG) suggest that bacterial overgrowth in the small intestine in patients who have undergone gastric bypass surgery may be linked to nutritional deficiencies.

To test their hypothesis that gastric bypass surgery decreases small intestinal micronutrient absorption by altering gut ecology, investigators from Washington Hospital Center conducted two retrospective studies of patients who underwent Roux-en-Y gastric bypass between 1999 and 2005.

One study by Shah and colleagues examined the role of small intestine bacterial overgrowth (SIBO) on zinc deficiency in 230 patients (199 female, 31 male) by first identifying elevated serum folate levels—a common marker for SIBO—in these patients, and then by looking at the association between elevated serum folate levels and serum zinc levels in the small intestine.

Of the patients with measurable serum folate, 145 had elevated levels equating to a 63% prevalence of SIBO. Of 172 patients with measurable serum zinc levels, 118 had elevated serum folate levels, including 78 (66%) with low serum zinc levels, and 54 patients had normal serum folate levels, including 43 (80%) with normal serum zinc levels. Shah and colleagues (abstract 61) found both of these associations to be significant ($P < 0.001$).

In a second study presented at the ACG meeting that looked at SIBO and calcium deficiency, Bal and colleagues used a glucose-hydrogen breath test (HBT) as well as measurable serum folate levels to identify SIBO. Serum calcium and 24-hour urinary calcium levels were also measured to evaluate an association with SIBO.

Serum folate, calcium and 24-hour urinary calcium levels were determined in 154 patients (129 female, 25 male). A significant association was found between SIBO and 24-hour urinary calcium levels, by looking at the association between both abnormal HBT and calcium levels, and elevated serum folate and calcium levels. Overall, 43 patients underwent HBT, with 42 having an abnormal breath test indicative of SIBO; 38 also had elevated serum folate levels. Of the 42 patients with an abnormal breath test, 30 had low 24-hour urinary calcium levels, a statistically significant finding ($P < 0.01$).

Of 154 patients with measurable serum folate and calcium levels, 48 had normal serum folate levels, with 38 reporting normal urinary calcium levels, and 106 had elevated serum folate levels, with 80 reporting low urinary calcium levels. Both of these findings (abstract 63) were statistically significant ($P < 0.001$).

According to Timothy R. Koch, MD, senior author of both studies, these results build on previous studies that have shown a well-established link between SIBO and the development of vitamin B12 deficiency. These results “raise the major concern that bacterial overgrowth, which is well known to induce vitamin B12 deficiency, may be an important factor in the development of a range of micronutrient deficiencies,” he said.