

Small Intestinal Bacterial Overgrowth (SIBO)

Small intestinal bacterial overgrowth (SIBO) occurs when excessive amounts of bacteria infiltrate the small intestine. In most people, the small intestine has fewer bacteria and varieties of bacteria than the colon. These gut bacteria aid in vitamin synthesis, improve digestion, produce vitamin K, and confer benefits for immunity. However, when these bacteria proliferate, they can lead to unpleasant gastrointestinal problems, malabsorption, and malnutrition.

Symptoms of SIBO

- Excess gas
- Bloating and abdominal distension
- Diarrhea
- Painful cramping
- Weight loss
- Constipation (reported by some patients)
- Muscle aches and pain (reported by some patients)
- Microbes that metabolize bile salts to insoluble compounds can cause fat malabsorption and inflammation (fat malabsorption causes deficiencies of vitamins A, D, and E)
- Vitamin B₁₂ deficiency (common in all forms of SIBO)
- Bacteria may synthesize folate (serum levels will reflect this elevation)
- Bacteria that metabolize carbohydrates can lead to excessive bloating
- Some bacteria produce toxins that damage the lining of the intestines

Causes of SIBO

SIBO most commonly results from a decrease in the secretion of gastric acid and a change in the motility of the small intestine. Normally, muscular activity sweeps food from the stomach into the small intestine and then into the colon. This same muscular activity is supposed to sweep bacteria out of the small intestine and into the colon. Unfortunately, some people do not have as much muscular activity as they should, and the bacteria get “stuck” in the small intestine.

As many as 80% of patients with irritable bowel syndrome (IBS) may have SIBO.

The following conditions may increase an individual's chance of developing SIBO:

- Celiac disease
- Chronic pancreatitis
- Crohn's disease (the scarring can cause obstruction)
- Diabetes (damages the nerves that control the intestinal muscles)
- Scleroderma (damages the intestinal muscles directly)
- Fibromyalgia
- Interstitial cystitis
- Renal failure

- Diverticulosis (bacteria may multiply in the diverticuli)

SIBO sometimes is present in some cancer patients, because medications that suppress the production of gastric acid, gastric resection, frequent or long-term use of antibiotics, and surgical removal of the ileocecal valve may lead to an increased risk.

Diagnosis of SIBO

SIBO is difficult to diagnose. A direct culture is used to diagnose it, but you cannot readily access some parts of the intestines to get a sample. The lactulose breath test, which measures hydrogen and methane gas production, is used. Unfortunately, a small number of people with SIBO do not produce either hydrogen or methane gas. Slowed transit through the small intestine can elongate the time necessary for testing (up to 5 hours). The lactulose breath test is not specific for SIBO, and a positive result could indicate a number of conditions, including celiac disease, pancreatic insufficiency, or Crohn's disease. The only way to know for sure what caused the positive test result is to treat for bacterial overgrowth and see if symptoms improve. Even then, symptoms might not improve, either because the treatment was not effective for treating the individual's SIBO or because the individual has another, yet undiagnosed, condition.

A way to extract bacterial DNA from stool samples recently was discovered. This can help determine the type and prevalence of bacteria present. This new test may prove quite useful for diagnosing SIBO in the future.

Help for people with SIBO

Snacking

Some experts recommend avoiding snacks in-between meals to give the intestines time for cleansing.

Antibiotics

Antibiotics are commonly prescribed. Antibiotic therapy is "successful" in 40%–70% of patients. "Successful" is defined as either providing symptom relief or producing normalization of the hydrogen breath test.

Probiotics

Research is looking at probiotics as a treatment for this condition. However, because of the many different types of bacteria in the intestines, a single type of probiotic is unlikely to help all people with SIBO. Probiotics are live microorganisms, which confer a health benefit to the host when consumed in adequate amounts. They occur naturally in fermented foods, such as yogurt, buttermilk, sour poi, and miso. Commercially available probiotics are used for treating both SIBO and IBS, but their effectiveness is not known. *Bifidobacterium infantis* 35624 is the only probiotic that is proven effective in the treatment of patients with IBS.

Other research

Researchers also are evaluating and treating the cause of diminished acid production or motility issues.

Fructose, sorbitol, and other sugar alcohols

Fructose, sorbitol, and other sugar alcohols often are poorly absorbed. Fructose is naturally found in fruit, fruit juices, honey, and high-fructose corn syrup. It is thought that high-fructose corn syrup might digest better than some fruit, because it contains near equal amounts of fructose and glucose. Likewise, bananas and strawberries, which contain a near equal amount of glucose and fructose, might digest better than honey, dates, and oranges, which contain more fructose than glucose. Cherries, apples, and pears contain both excess fructose and sorbitol, making them perhaps the most irritating.

Sugar alcohols include sorbitol, mannitol, xylitol, erythritol, lactitol, maltitol, isomalt, and hydrogenated starch hydrolysates. Ten grams of sorbitol, which is found in two pears or roughly five sugar-free mints, cause moderate to severe abdominal discomfort in 17% of healthy subjects.

Splenda®

Splenda may reduce beneficial gut bacteria, so you might want to eliminate its use.

Diet

It is especially important that you eat a well-balanced and healthy diet if you have SIBO. You may need to take oral supplements to correct nutrient deficiencies, such as for vitamins B₁₂, A, D, and E.

References and recommended readings

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Scarlata K. Small intestinal bacterial overgrowth—what to do when unwelcome microbes invade. *Today's Dietitian* [serial online]. 2011;13:40. Available at: <http://www.todaysdietitian.com/newarchives/040511p46.shtml>. Accessed February 13, 2012.

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