

IBS and bloating: When the gut microbiota gets out of balance

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Irritable bowel syndrome (IBS) belongs to the most widespread diseases in Western countries, causing up to sixty per cent of the workload of gastrointestinal physicians. One of the most frequent symptoms of IBS is bloating, which reduces quality of life considerably as patients perceive it as particularly bothersome. For quite a long time, IBS was believed to be a primarily psychological condition.

"Contrary to this view, recent findings suggest that IBS is linked to clearly detectable [gut microbiota](#) alterations. Additionally, bloating can be related to specific kinds of diet, thus opening up promising paths towards an efficient disease management," says Professor Giovanni Barbara (University of Bologna, Italy).

This was one of the topics presented at the Gut Microbiota for Health World Summit in Miami, FL, USA. On March 8-9, 2014, internationally leading experts discussed the latest advances in gut microbiota research and its impact on health.

IBS is one of the most common gastrointestinal disorders, causing several symptoms, which include abdominal pain, bowel movements that cause discomfort, and—in nearly all patients—bloating. IBS affects up to 20 percent of the population in Western countries. This condition represents up to 10 percent of the workload of family physicians and up to 60 per cent of that of gastroenterology practitioners. Within the range of IBS troubles, it is bloating that bothers patients most.

A microbiota-based condition

For quite a long time, not only bloating, but IBS in general was frequently perceived as a mainly psychological condition, mostly affecting young, predominantly female and anxious patients with no detectable abnormalities in their bowels. Consequently, the disease burden was often attributed to an imaginary disorder, and the treatment was far from satisfactory.

"Thanks to new diagnostic insights and a rapidly growing knowledge about the role and function of the microbial communities living inside our guts, our view on IBS and its causes has changed considerably," says Prof. Barbara, President of the European Society of Neurogastroenterology and Motility (ESNM). According to him, there is a lot of evidence showing that IBS is associated with an imbalanced composition of the gut microbiota. This means that the system of checks and balances between beneficial and potentially harmful bacteria, which characterizes a healthy gut microbiota, is disturbed in IBS patients.

"Probably the best example of this interaction is the discovery that IBS symptoms develop in up to 10 percent of previously healthy subjects after a single episode of gastroenteritis caused by an infection through bacterial pathogens like *Salmonella*, *Shigella* or *Campylobacter*, which can severely disrupt the microbiota balance," says Prof. Barbara. An additional problem results from the fact that not only infections, but also the antibiotics that are used as a remedy, may increase the risk for IBS, as they, too, can alter the gut microbiota in a negative way.

Nutrition is key

Another important factor is nutrition. Food that is rich in carbohydrates, particularly fiber, tends to produce larger amounts of gas than a diet

without these ingredients. In some individuals, this might lead to repeated bloating and flatulence. The potentially negative impact of this kind of nutrition applies in particular to individuals who already suffer from IBS. Recent studies show that such a "flatulogenic" diet (for example, bread, cereals and pastries made of whole wheat, and beans, soy beans, corn, peas, Brussels' sprouts, cauliflower, broccoli, cabbage, celery, onions, leek, garlic, artichokes, figs, peaches, grapes and prunes) induces profound changes in the microbiota of IBS patients, thus prolonging and increasing the symptoms. However, at the same time, the gut microbiota of healthy subjects remained stable and unaffected by this kind of diet.¹

"On the other hand, we now know for sure that diets containing low fiber content improve these symptoms significantly. Recent research results suggest that, compared to a normal Western diet, a diet low in so-called FODMAPs (fermentable oligosaccharides, disaccharides, monosaccharides and polyols) reduces symptoms of IBS, including bloating, pain and passage of wind," says Prof. Barbara.

Another interesting observation Prof. Barbara points to is that those IBS patients who have several clear-cut gut symptoms have also more profound changes in their gut microbiota, as compared to other patients whose bowel physiology is less disturbed, but instead combined with mood disorders. This suggests that the troubles of the second group are more socially grounded and mood-related, whereas the condition of the patients belonging to the first group is predominantly physiologically based—IBS proper, so to speak.

What further developments can doctors and patients expect? "It is amazing to see how quickly [gut](#) microbiota research has gained center stage within gastroenterology in the course of the past few years," says Prof. Barbara. "This is due to its crucial role not only for IBS, but for gastrointestinal health in general. In order to further improve diagnosis

and treatment, we have to identify more of the various functions of the intestinal bacteria. With regard to clinical applications, bacterial functions are even more important than their types."

More information: ¹ Manichanh C, Eck A, Varela E, Roca J, Clemente JC, Gonzalez A, et al. Anal gas evacuation and colonic microbiota in patients with flatulence: effect of diet. *Gut*. 2013 Jun 13. PubMed PMID: 23766444. Epub 2013/06/15. Eng.

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