Build Your Resilient Gut
MICROBIOME & BEYOND

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Common GI Problems & Solutions:

Small Intestinal Bacterial Overgrowth - Root Causes & Failed Approaches

Video Transcript:

Now let's end on small intestinal bacterial overgrowth. Now I've done a talk on this to practitioners for two hours just on this topic. I think in one of the bonuses, I do have a much more detailed talk on SIBO itself. Michael and team will verify that, but I believe that's one of the resources that you have in the course.

So let me touch on SIBO and the most important parts here, and then we could tackle more questions about it in the Q&A. Then you can of course go and listen and watch that much more detailed version of this part of the talk where, on its own, it's something like 30 or 40 slides. So let's tackle SIBO. It's a very common issue, but I think it's often misunderstood.

SIBO is characterized as small intestinal bacterial overgrowth. If you recall in our physiology module that within the small bowel, you've got a very low amount of bacteria, generally speaking, somewhere around that 10 to the 4 to 10 to the 6 CFUs per ml. You have a million times more microbes or bacteria in the large bowel.

So you want to maintain low levels of bacteria in the small bowel. That's a normal population of the small bowel is a very small concentration, and it increases as you go further down the small bowel, but can be as few as a thousand bacterial cells

per ml of expectorant that you take out. That's a very, very low amount. It's a relatively sterile environment in that case.

Signs and symptoms of SIBO, you guys are all familiar with this, bloating, gas, abdominal pain, diarrhea, and irregular stool consistencies, difficulty with certain foods. So FODMAP rich food, so fiber starches, carbohydrates, and so on are a problem here.

Keep in mind that these symptoms are also very similar to some of the other ones that we talked about that are upstream. Part of that is because of these upstream problems we talked about earlier feeds SIBO risk as well. So they can have overlapping symptomology.

Nutritional deficiencies. You end up with fat-soluble vitamin malabsorption, iron deficiency issues, B12 deficiency, and unintended weight loss because you can't assimilate taking the nutrients effectively. Systemic symptoms are fatigue, cognitive decline. So you get brain fog, memory loss issue, symptoms associated with other nutrient deficiencies as well, things like weakness, irritability, dry skin, non-alcoholic fatty liver disease and liver congestion. Of course, the bloating and the discomfort from eating food in itself is one of the most common and irritating symptoms of this condition.

Then thoughts on testing. So when you think about the breath test, that's the most commonly used tests for SIBO. It's measuring hydrogen and methane gas in your breath. Then they indicate different types of bacterial population. If you're methane-dominant, meaning that the device picked up more methane gas from your breath, then the methane-dominant is likely driven by an overgrowth of a methanogen called ... Oh, the name is escaping me right now. Methanobrevibacteria. That's what it is.

So it's a methanogen, meaning when it breaks down food, it produces methane as a byproduct, and it's doing this in the small bowel where it's not supposed to be. Certainly not supposed to be fermenting and breaking down food, but it's there and it's

a contaminant in the small bowel. It's not being controlled well because of low bile acid, low immune function, low keystone species, non-competitive bacteria, and so on.

Or you can have hydrogen-dominant, which is typically E. coli or other gram negatives like enterococcus. Those normally come from oral dysbiosis and come from contamination in food as well.

Now the methane-dominant tends to create a different effect on the gut than the hydrogen dominant. But either way, when we talk about what is causing SIBO, even though the types of bacteria are different, the causes are typically the same.

Now methane will make you feel typically more constipated. Hydrogen-dominant will typically you have looser stools. But, nonetheless, even though they may present slightly differently, they tend to have the same common drivers behind them.

Complexity or diagnosis. While breath tests can provide clues, it's not definitive. There are some data that at least 50% of the breath tests are false negatives. So you can't be sure the. Gold standard is a endoscopy to look at some of this, and then taking a sample of the aspirate that you can find in your upper GI tract and then plating it to look at that.

But one of the easy ways is understanding gastric emptying time and then eating food, especially eating food with high FODMAPs and all that. The food ends up in your stomach and it takes 30 minutes or so to end up in the stomach and really start churning in the stomach. Then it clears the stomach after about two and a half to three hours.

But within that first two hours and not immediately, so not within the first few minutes of chewing it, but within the first couple hours, if you start getting bloating symptoms and all that, then you know that it's moving past the stomach into the small bowel where it's starting to get fermented. But if it's happening before that two hours, it's probably something else, because it takes that much time for the food to actually get to the small bowel where it can be fermented. The bloating cannot happen within two

hours or less, or three hours or less even in most cases.

So the people that get a lot of bloating and distension immediately after eating, that's probably not SIBO. But if you eat and then three, four hours after eating, you get real significant distension or maybe your gastric system is moving a little faster, so it could be an hour or two after eating, but still there's a time delay. That's something really important to keep in mind.

Stool testing and organic testing can give you clues, but again it's not definitive for SIBO. So don't lean on any microbiome testing or organic acid testing to be definitive. You can take all of these together as a picture to do a differential diagnosis working with a healthcare practitioner. But any one of these by themselves is not definitively diagnosable.

So SIBO is driven by lots of the upstream problems we just talked about, low stomach acid. It starts with that. The gastric barrier is supposed to kill bacteria that's coming through. If you have low stomach acid, you have more and more gram-negative bacteria from your mouth that's surviving past the stomach and entering into the small bowel. Eventually they'll start to colonize and start to overgrow.

So low stomach acid is a big problem. In fact, there is something called PPI-induced SIBO because people who use proton pump inhibitors regularly end up with SIBO because of the low stomach acid issue. Impaired migrating motor complex. Remember that is a sweeping and cleaning action that removes bacteria, food particles, and all that from the small bowel after digestion has been completed. But migrating motor complex can be disrupted because of vagus nerve disruption, because of leaky gut, and then also because of overeating and not leaving adequate time in between meals for the MMC to activate. So that's a problem.

Bile insufficiencies. Bile is really important in terms of controlling bacterial overgrowth in the lining in the small bowel. Bile is an antimicrobial. It's a surfactant. It can mix with dietary fat and create strong antimicrobials. Also, when bile is being reabsorbed at the terminal end of the ileum, it ends up triggering a receptor called a nuclear effects

receptor, which causes the small intestinal cells to release antimicrobials into the mucous lining in order to prevent microbes from overgrowing while food is present. So bile is required for all of that. This is why people with liver dysfunctions have four times the higher risk of developing SIBO than same-age individuals who don't have liver dysfunction.

So with SIBO, you have to take care of your liver and you have to take care of bile and bile recycling, like we talked about. Again, all of those things upstream that we talked about are components that lead to SIBO.

Oral microbiome imbalance. We didn't talk much about that because you do have a bonus that gives you much more insight in the oral microbiome. But when you have a dysbiotic oral microbiome, you have an overgrowth of gram negatives and dysfunctional bacteria that you swallow, hundreds of billions, if not up to a trillion of each day. Then your stomach acid is not killing them. The bile salts are not controlling them, so they can end up in the small bowel and end up colonizing. So the oral microbiome plays a role.

High refined-carbohydrate diets and significant dysbiosis, that makes sense. Then the compromised ileocecal valve. If you remember the valve talk, the ileocecal valve is that valve between the terminal end of the small intestine and the beginning of the large intestine. And so, that valve prevents things from the large intestine from going up. But some people can have a dysfunction in that ileocecal valve. It can be due to leaky gut, it can be due to dysbiosis. It can be a congenital issue.

But, nonetheless, if the ileocecal valve is compromised, pressure in the cecum, which is that first part of the large bowel, can drive things back up. It can drive gram-negative bacteria from the large bowel into the small bowel. It can drive high volumes of bacteria because, remember, there's a lot more bacteria in the large bowel. It can drive it up to the small bowel, and it can drive more bile salts and other issues back into the small bowel, which can create some inflammatory issues because those conjugated bile salts are supposed to move into the large intestine,

not into the small intestine.

So these are all the factors that can lead to SIBO that end up leading to the overgrowth. The biggest issue with SIBO is that more often than not, we're simply focusing on the overgrowth in terms of treatment without dealing with each one of these issues.

Now SIBO is also very common because all of those common earlier GI things that we talked about end up becoming a cause of SIBO. So if you're not dealing with your gastroparesis, with your reflux, with your gastritis, with your HCl inadequacies, all of those things, and bile acid issues, they will all lead to small intestinal bacterial overgrowth.

So in my talk to clinicians about SIBO, I like to say that SIBO is not a condition of itself. It doesn't appear on its own for some particular reason. SIBO is really a symptom of a number of other conditions that are going wrong. If we can think of SIBO in that way, then we can really start to think about the pieces and the parts that are dysfunctional that create this environment where bacteria can overgrow in the small intestine. It's all of these things that we're listing here. So all of these things have to be paid attention to.

So this is why the conventional approaches of just taking antibiotics and killing things and reducing the overgrowth temporarily doesn't really work, because the overgrowth is not the cause of the problem. The overgrowth is a symptom. So it doesn't address the cause of the problem when you take antibacterials or antimicrobials for a long period of time.

Long-term resilience and restrictive diets also can be a problem because they may alleviate some of the symptomologies because you're not fermenting in the small bowel. You don't have FODMAPs going in, you don't have a lot of fermentable carbohydrates going in, but it doesn't necessarily take care of all the problems, all of the drivers of SIBO as well. So it's not effective to eliminate SIBO.

Then the failure of restoring motility and the migrating motor complex. So you have to have motility in order for the food to move through the small bowel. If you don't have

the MMC, you're not sweeping the small bowel after the meal's been digested, and removing excess bacteria and excessive amounts of food that weren't digested. And if you don't have peristaltic activity, you don't have the motility component which drives the food out of the small intestine.

Both of those are issues with the vagus nerve, with the gut-brain axis, and with leaky gut. So you have to deal with vagus nerve, gut-brain axis, and leaky gut if you're trying to deal with SIBO, so you don't have the stasis.

Then overlooking oral hygiene is a big issue. A lot of the SIBO-based bacteria are coming from the mouth and surviving through. So we want to make sure the mouth is healthy. So it's a lower level of inoculum from the mouth.

So how to successfully work on the SIBO issue and restore the upper GI balance? From a dietary standpoint, you can do a temporary low FODMAP or specific carbohydrate diet, which can reduce symptoms temporarily by limiting these fermentable substrates. But you do want to start to reintroduce them because these are all very important food components for the large bowel and the trillions of microbes there and all of the things that they convert these types of foods into, including things like short-chain fatty acids and urolithins and enzymes and so on.

So if you do a dietary adjustment like a low FODMAP or specific carbohydrate, you would only want to do it temporarily. You can reintroduce fiber slowly after initial relief, add in prebiotic-rich foods, and slowly avoid feeding unwanted bacteria by using oligosaccharides as prebiotics. So oligosaccharides are things like FOS, fructooligosaccharides, GOS, galactooligosaccharides, XOS, which is a xylooligosaccharides. Those are all fibers and prebiotics that specifically feed genres of good bacteria. So you know you're not going to be feeding the SIBO-related overgrowth in the small bowel the same way while you're still getting improvements in fiber.