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SIBO Solutions: A Guide to Recognition, Diagnosis, and Treatment

Dr. Buch:
Welcome to *GI Insights* on ReachMD. I'm Dr. Peter Buch, and today we're joined by returning guest Dr. Eamonn Quigley, who will explore the topic of small intestinal bacterial overgrowth, or SIBO. Dr. Quigley is the Chief of Gastroenterology and Hepatology and the Co-Director of the Lynda K. and David M. Underwood Center for Digestive Disorders at Houston Methodist Hospital

Dr. Quigley, welcome back to the program.

Dr. Quigley:
Thank you very much. It's a great privilege to be with you again.

Dr. Buch:
We're so happy to have you. So, Dr. Quigley, let's get right to the heart of the matter. How do we test for SIBO? And what leads to an overdiagnosis of the condition?

Dr. Quigley:
Okay, I'd like to go back a little bit to my early days in gastroenterology when I began to become aware of small intestinal bacterial overgrowth but became aware of it as a disorder of malabsorption and maldigestion. And back then, we became aware of this condition in a patient who had steatorrhea, who had a vitamin B12 deficiency, who had hypoalbuminemia, and all the symptoms that can arise from this, and we tested by doing an aspirate from the small intestine—in fact, from the jejunum. What's happened since then is that the aspirates have become less popular—for lots of reasons which we can discuss—and breath tests have become much more popular, and I would say problematic. So still the most accurate test for bacterial overgrowth is an aspirate of fluid from the jejunum, which is cultured for organisms, and the number of colony-forming units is defined.

Dr. Buch:
Dr. Quigley, is anybody in the clinical realm using jejunal aspiration for testing at this time, or is it just left as an experimental procedure?

Dr. Quigley:
No. It was a clinical procedure, but what happened, of course, is with the proliferation of upper gastrointestinal endoscopy, is that people began taking aspirates from the duodenum. Now, there's nothing intrinsically wrong with that, except that the normal ranges for the number of bacteria in the duodenum, in my opinion, have not been established in the same way as normal ranges of the jejunum were, so that's a limitation.

Now, when we get to breath testing, the two most commonly performed breath tests nowadays are the lactose breath hydrogen test and the glucose breath hydrogen test. Of these, I believe that the lactose breath hydrogen test is prone to significant false-positive rates due to the effect of rapid transit, which, of course, can occur with IBS with diarrhea on the result of the test; for that reason I would advocate that if you're going to do a breath test, you should do the glucose breath hydrogen test and interpret it carefully.

Dr. Buch:
Thank you. So let's get into the heart of the matter. What's the data regarding the role of SIBO in irritable bowel syndrome, or IBS?

Dr. Quigley:
This is a very controversial area. So here's my summary. Diagnosing SIBO in irritable bowel syndrome using the lactose breath hydrogen test is not accurate. Diagnosing SIBO in irritable bowel syndrome using the glucose breath hydrogen test may be accurate,

but even here there are some false-positive results, so I would be cautious. And I'm not alone in this. Several others have said the same thing. I would be cautious about performing and interpreting breath tests in patients with irritable bowel syndrome. The reason I say this is a very simple one, and that is that if you overdiagnose SIBO, you're going to be exposing a lot of people to antibiotics. And as we all know, antibiotic resistance is already a big issue worldwide, and the last thing you want to do is to contribute to this. The other point I would make is that the evidence that antibiotics improve IBS symptoms is not great. Yes, we do have very high-quality studies which show that in patients with non-constipation IBS, rifaximin is associated with a significant but small improvement in symptom outcome. Whether that is due to the eradication of bacterial overgrowth, we do not know. That has not been confirmed. There are other ways that rifaximin could be having an effect, such as on the bacteria in the colon or even some other processes, like an anti-inflammatory effect. So, yes, rifaximin—and that's the only one that has got good data as far as I know—can reduce symptoms in patients with non-constipation IBS, but whether that can be explained purely on the basis of bacterial overgrowth is not defined.

Dr. Buch:
So, Dr. Quigley, you mentioned something in passing, and I'd like you to define it a little bit better. You mentioned that the lactose test for SIBO is not as accurate as the glucose test. Can you tell us what accounts for false-positive glucose tests?

Dr. Quigley:
Well, the idea behind lactulose was a great one—in other words, that lactulose is a sugar that we cannot digest but for which bacteria in the colon have the enzymatic equipment that they can digest it. So, originally, lactulose was introduced as a mechanism for measuring transit across the small intestine. Now, the problem that arises is that if you have rapid transit for whatever reason in the small intestine, you will see an early peak with lactulose, and that can be confused with a peak ascribed to small intestinal bacterial glucose. So basically, the way you do a lactose breath test is you give the patient a dose of this syrup to drink, and then you perform breath test sampling every 30 minutes for up to three hours. And the idea behind this is that you should not see a peak in breath hydrogen until the lactulose reaches the cecum, and then you see a peak. If the patient has bacterial overgrowth, you will see an earlier peak because now they're encountering bacteria in the small intestine and not just in the cecum. But, as I mentioned, the big problem with this is that if transit is rapid—and lactulose itself actually accelerates transit—you will see an early peak because it is arriving in the cecum earlier than you would predict, and that's got nothing to do with bacterial overgrowth. That's the problem. So for that reason, there are various studies out there which show a very high false-positive rate with lactose breath hydrogen testing, and I do not recommend it as a test for bacterial overgrowth.

Dr. Buch:
So coming back to the glucose testing, what can cause a false positive?

Dr. Quigley:
Well, the same thing. There was a nice study a few years ago from a group in Milwaukee where they looked at the glucose breath testing at the same time they did simultaneous scintigraphy to measure small bowel transit, and they found a significant rate of false-positives with glucose, again because of rapid transit. The glucose test works in a different way. So the idea here is that glucose should be completely absorbed and you shouldn't see any signal with glucose. However, if, if there are bacteria in the small intestine, they will compete with the host for this glucose, and you'll get hydrogen being produced from metabolism, and you see hydrogen appearing in the breath. It actually is quite a good test, but you've got to be careful of the patient with rapid transit because you may see a false-positive result. But the false-positive rates are lower with glucose than lactose, and overall, in many comparative studies, it has been shown to be more accurate than lactose, and I would, therefore, advocate if you're going to do a breath test, you should do that.

Dr. Buch:
So let's move into the future. What do you expect that we'll be doing to diagnose SIBO in the future? And in the meantime, until we reach that future time, is there any harm in empirically treating SIBO?

Dr. Quigley:
Well, I'll take the second question first. So I would not advocate empirically treating SIBO because that assumes that you know what symptoms are associated with SIBO, and that assumption nowadays is based on symptoms like bloating and distension and borborygmi and gas, et cetera, and I'm not convinced that they are symptoms which truly are diagnostic—or suggestive, I should say—of small intestine bacterial overgrowth, so I would not advocate empiric antibody therapy.

Now, to your first question, "What's in the future?" That's the exciting part. We now have molecular microbiology, and we now have techniques for assessing the enumeration and the function in terms of metabolism of the entire microbiome of the small intestine. And what we're beginning to see are studies that are taking samples from the small intestine and doing metagenomics, metabolomics, and transcriptomics and actually are showing differences in individuals with certain GI symptoms versus all individuals, so that's beginning to happen. I think we'll see more of that. Obviously, there is use with accessibility with that particular approach.

The other approach, which I'm also excited about, is capsule technology, and we're beginning to see capsules that can analyze gas as they transit the small intestine, so they literally can give you a dynamic printout of gas concentrations along the length of the intestine in health and disease. Now, this is a novel technology. We're in early stages with it, but I think that's also very exciting. And there's another capsule technology, which we've already begun to see results with, which actually can sample the contents of the small intestine at various points—which, of course, would not require endoscopy or intubation—and they are also being evaluated. So I think capsule technology combined with molecular diagnostics—metagenomics, transcriptomics, and metabonomics—will provide the future in this area.

Dr. Buch:
Thank you. So Dr. Quigley, if we have a patient with suspected SIBO and irritable bowel syndrome, should we be treating it early or waiting until we have tried other therapies?

Dr. Quigley:
Well, again, it depends what you mean by suspected SIBO. So if you have a patient with irritable bowel syndrome, I would treat them as if they have irritable bowel syndrome, which might involve using rifaximin—which, as I mentioned earlier, it can be effective in people who have non-constipated irritable bowel syndrome—but I would not rush in with the idea that all patients with irritable bowel syndrome have underlying bacterial overgrowth. I would be very hesitant to do that unless you had other clinical parameters which suggested that SIBO is a possibility, such as dilated intestine, presence of diverticula in the small intestine, vitamin B12 deficiency, steatorrhea. Of course, that's now moving you into a totally different category where you're beginning to think of very different diseases with severe impairment in motility or strictures due to Crohn's disease or other diseases, but I would be very reluctant to launch into SIBO as the first diagnostic approach in a patient with irritable bowel syndrome.

Dr. Buch:
Thank you. For those just tuning in, you're listening to *GI Insights* on ReachMD. I'm Dr. Peter Buch, and I'm speaking with Dr. Eamonn Quigley about small intestinal bacterial overgrowth.

So moving forward, Dr. Quigley, is there any limit on how often we can use antibiotics to treat SIBO?

Dr. Quigley:
Of course there is. That's a very important question. And I get very worried about people who are getting recurrent treatments with different antibiotics for SIBO. Now, I have patients myself who need repeated courses of antibiotics; these are patients with scleroderma of the small bowel, patients with the radiation enteritis, et cetera. Now, these are patients who have a severe impairment of GI function, which leads them to develop severe bacterial overgrowth, and they do need rotating antibiotics because, of course, resistance can become an issue. But I've become very concerned about patients who do not have that type of scenario, where somebody has diagnosed them on the basis of a breath test with bacterial overgrowth. They're treated; they don't get better; they get another treatment; and this goes on and on; and I think somebody has to say, stop and go back and really question whether there really is bacterial overgrowth as a factor in these symptoms.

Dr. Buch:
How about on a scenario where the patient does get better and then a few weeks later is having the bloating and the discomfort all over again? How would you approach that?

Dr. Quigley:
Again, I mentioned my reluctance to accept bacterial overgrowth as a cause of these symptoms. I would always keep an open mind, but I would be reluctant to give people with irritable bowel syndrome rotating courses of antibiotics unless you had a good reason to do so. I would be careful about that.

Dr. Buch:
Thank you. And as a quick follow-up to that, do probiotics have any role in treating SIBO?

Dr. Quigley:
There's not really much evidence. I'm not convinced that there is good evidence that probiotics on their own have an impact in patients with bacterial overgrowth, so I would not use them as a first-line therapy or indeed any formal therapy in this situation.

Dr. Buch:
Thank you. Now, we're almost at the end of our discussion, Dr. Quigley, so are there any other insights you'd like to share with our audience today?

Dr. Quigley:

I just would say to you, “Watch this space.” I’m hopeful that the technologies that I mentioned will become more widely available and that they will become a part of clinical practice in the not too distant future, and then we can resolve once and for all what exactly SIBO is and how it contributes to common GI symptoms.

Dr. Buch:
What a thought-provoking review on SIBO, and I want to thank my guest, Dr. Eamonn Quigley, for sharing his insights. Dr. Quigley, it was great speaking with you once again.

Dr. Quigley:
Thank you very much. It was fun.

Dr. Buch:
For ReachMD, I’m Dr. Peter Buch. To access this and other episodes in this series, visit *GI Insights* on ReachMD.com, where you can Be Part of the Knowledge. Thanks for listening, and we’re looking forward to learning with you next time.