KRESSER INSTITUTE
FOR FUNCTIONAL AND EVOLUTIONARY MEDICINE

Gut Pathology - Part One

Hey, everyone, in this section we're going to talk about gastrointestinal pathologies.

Before we do that, I want to take a moment to talk about the difference between a pathology and a syndrome and a disease. I've put the systems model of functional medicine that we covered in the introduction on the slide here.

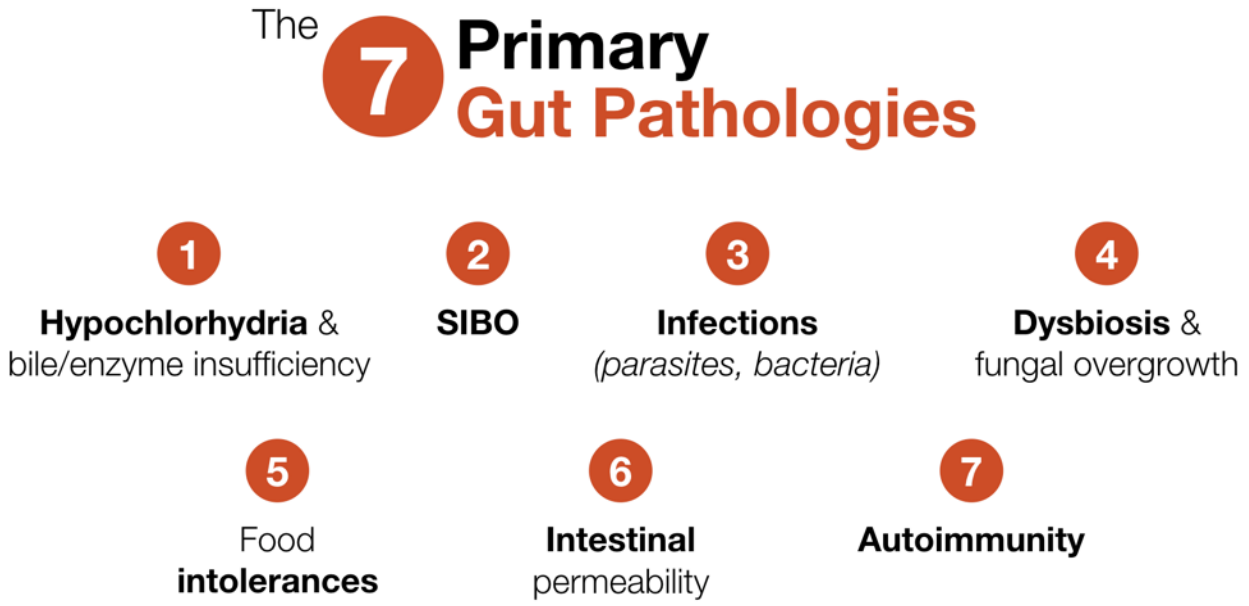
Remember, in functional medicine we want to work from the inside out, whereas conventional medicine often works from the outside in. Syndrome is a label that we give to a collection of signs and symptoms—so an example of this would be irritable bowel syndrome, or polycystic ovarian syndrome, or fibromyalgia syndrome—and syndromes are helpful in allowing us to quickly refer to a condition when we're talking to other clinicians or patients about it, but they don't necessarily shed light on what's causing the problem in the first place.

The term "disease" is more specific than syndrome because it refers to a specific ideology or pathology, or at least a well-defined disease entity. So an example of this for the gut would be something like inflammatory bowel disease or gastroesophageal reflux disease. That isn't to say that we are absolutely certain about what causes these things or that they're singular in terms of their ideology or pathogenesis. In many cases, they have multiple ideologies and pathogeneses, and we're still learning more and more about what causes these diseases and often overturning what we previously believed, but all diseases are mediated by underlying pathologies, and that's the key point I'm trying to make here. These underlying pathologies are mechanisms of physiological dysfunction, and I know we talked about this before, but I just really want to drive

this point home. GERD may be caused by low stomach acid, for example, or inflammatory bowel disease may be caused by dysbiosis or even triggered by parasite infection or a viral infection. So it follows that if we want to address the root cause of illness, which is exactly what we're doing in functional medicine, we need to focus on these pathologies.

So I've listed the main risk factors for developing digestive pathology on the slide here. These include things like family history. We know that there is genetic predisposition, but this isn't enough. It has to be combined with environmental triggers, as we've already discussed, but there is a genetic predisposition. Cesarean birth, which sometimes leads to profound alteration in the development of the intestinal bacteria, formula feeding instead of breastfeeding, same idea on that. Of course, the standard American diet, which leads to profoundly altered gut microbiota and inflammatory gut environment. Food poisoning, this is interesting, you may have heard now that there's a new blood test for IBS, and that blood test is actually predicated on the idea that food poisoning is the triggering event for irritable bowel syndrome, and this is what specialists like Dr. Mark Pimentel believe, and there's certainly some evidence to support that. Antibiotic use, we've covered this already, and I'm sure you're already aware of how antibiotics affect the gut microbiota. Other medications that have been shown to affect the gut microbiota like NSAIDS. Birth control, chronic stress, sleep deprivation—even a single night of significant sleep deprivation can affect intestinal permeability and other aspects of digestion and gut function. Physical inactivity or excess physical activity, which isn't listed there, hypothyroidism, T3 is required for intestinal motility, which is why hypothyroidism often leads to constipation, and hyperthyroidism leads to diarrhea and loose stools. HPA axis dysfunction, we're also including the thyroid and gonads in that, so the HPGTA axis dysfunction, changes in cortisol secretion can lead to digestive pathology via a number of different mechanisms. Excess alcohol intake can increase intestinal permeability and cause a lot of other problems, particularly in the liver. Cigarette smoking and various environmental toxins such as mold, biotoxins, and heavy metals. So as you can see, if we're

living in the modern lifestyle, we are basically inundated with risk factors that lead to digestive pathology, and it's why we see so much of it in our practices.



There are seven primary gut pathologies that we'll be covering in this unit, and they underlie, in my opinion, virtually all gut diseases, syndromes, and symptoms, from IBS to GERD to constipation to inflammatory bowel disease to hemorrhoids. And this is where you'll really need to focus your attention in order to heal the gut and deal with some of the system problems that arise from gut pathology. So let's take a look at each of these in a little more detail.

As I mentioned in the basic physiology unit, the stomach produces hydrochloric acid, which is stomach acid, and it serves three main functions: the chemical breakdown of food, the absorption of nutrients, and to protect us against pathogens. Bile is created by the liver, and digestive enzymes are created by the pancreas. Bile helps us to break down fat and enzymes help us to break down protein, fat, and carbohydrate. So if the secretion of hydrochloric acid or bile or enzymes or all of the above is impaired, then that's going to lead to problems all the way down the digestive tract. Something I often tell my patients is we have to consider digestion from the top down, and it actually starts in the mouth, so chewing can be an important, really important, and often ignored part of healthy digestion, but certainly the stomach and the secretion of hydrochloric acid, which in turn influences the secretion of enzymes and bile is one of the most important starting places when you think about digestive pathology.

So let's look a little more closely at hypochlorhydria, which is the medical term for low stomach acid. Given the main functions of stomach acid, which are to break down food, absorb nutrients, and protect against pathogens, it's easy to predict what can go wrong when stomach acid production is insufficient. The best research on this comes from studies examining the long-term effects of acid-suppressing drugs like proton pump inhibitors, or PPIs, which can actually suppress stomach acid production to close to zero in some cases. And that research shows four primary

consequences of PPIs, and low stomach acid by extension, and those are: number one, increased bacterial overgrowth in the small intestine, SIBO; number two, impaired nutrient absorption; number three, decreased resistance to infection; and number four, increased risk of cancer and other diseases.

Since the stomach's at the top of the GI tract, a problem there will often lead to problems further down, as I just said, so for example, proper secretion of pancreatic enzymes requires that the chyme from the stomach be at a certain pH when it enters the small intestine, and if the stomach acid is low, the pH of the chyme will be too high, meaning it will be too basic, and the pancreas won't secrete digestive enzymes. This will lead to undigested food, especially carbohydrates, which can lead to SIBO and further problems down the digestive tract. And many clinicians, myself included, also believe that low stomach acid is one of the causes of heartburn and GERD. You may be familiar with the blog series I wrote on this, which we later turned into a free e-book. We're going to make this available in the supplemental materials for this section. Please read that if you haven't already because it goes over the science and the research and the case for low stomach acid rather than high stomach acid being one of the primary drivers for GERD and heartburn.

But the short version I'll give you here is that low stomach acid leads to bacterial overgrowth, which in turn causes production of gases which put pressure on the lower esophageal sphincter and cause it to open inappropriately, which then allows acid from the stomach to reflux into the esophagus. And that can happen whether there's very little acid in the stomach or a lot. It doesn't take a lot of acid to cause reflux, so whatever acid is in the stomach can get up into the esophagus when the LES malfunctions, and that will cause heartburn. So we'll discuss how to approach this later in the unit when we talk about treatment, but I can tell you now and you'll see for yourself, if you go look at these posts on my blog, we've had tremendous success in treating the treatment of GERD and heartburn this way. There are over 885 comments on my blog post with the treatment suggestions, with reports from people who'd been on acid-suppressing drugs for years or even decades, who were able to get off them using the strategies that I'm going to share with you.