

Clinical Pearls for Gut Health

“Metabolic Endotoxemia refers to toxins that are produced by the microbiome in your gut and the metabolic dysfunction that these toxins have on our overall health.”

Most of us are familiar with the saying, “No matter what you are treating, fix the gut first.” Although it's been a mantra for years, let's look deeper at some of the implications of a dysbiotic gut and discuss some clinical pearls to repair it.

Have you ever heard the term “Metabolic Endotoxemia?” It refers to toxins that are produced by the microbiome in your gut and the metabolic dysfunction that these toxins have on our overall health. We often think of amoeba, yeast, or bacterial agents causing dysbiosis, and we should because one of the major causes of endotoxemia comes from dysbiotic byproducts. I know it's corny, but 25 years ago, Dr. Dietrich Klinghart made a statement that I never forgot. In his unforgettable German accent, “It's the pees and the poops of these organisms that cause problems.” And yes, that has been documented in the literature, but these organisms also expire, and their cellular materials create destruction as well. The primary one most people are sensitive to are Lipopolysaccharides or LPS. The presence of excessive



LPS create innate immune responses that are sub-clinical, persistent, and are often the cause of low-grade systemic inflammation.

Just to give you an idea of how destructive LPS are, when researchers want to create arthritis in animals to test their drugs, they inject LPS into the joints of animals.

LPS only come from the gut. That means if we can support that single cell lining that separates our gut from our blood stream, we can prevent LPS from entering the blood stream, ramping up inflammation. LPS, even at low dosages have been shown to

cause acute anxiety, depressive symptoms, cognitive deficits, and decreased visceral pain tolerance.

At the EPIC conference in Houston TX, Dr. Jill Carnahan focused on the gut-brain connection. In this video, I thought it would be fun to share six clinical pearls she shared.

Clinical Pearl Number 1:

The vagus nerve acts as a major highway of bi-directional communication between the gut and the brain. The word bi-directional is very important because what we think and what we are meditating on

affects the pH of our gut. The pH has a profound influence on the environment where the microbiome live. Moving north, microbes in the gut can produce neurotransmitters like serotonin and GABA that affect mood behavior and cognitive function. Inflammatory markers like IL-6, IL-1-beta, interferon gamma, triglycerides, even post prandial insulin are affected by LPS. I didn't know endotoxin concentration increase during the first 5 hours after a meal.

So, **Clinical Pearl Number 2:**

If someone has brain fog after eating, suspect metabolic toxemia.

We've discussed in the past that gut microbes can also affect brain health. For example, it's well known that LPS, lipopolysaccharides, secrete IL-6, and IL-6 is associated with major depressive disorders. Yet, how many of us turn to a gut reboot when we see patients complaining of depression? LPS have been associated with leptin resistance, chronic constipation, mood disorders, depression, cognitive decline, memory loss, anorexia nervosa, anxiety, chronic pain, Parkinson's, and autoimmunity. Let me repeat that slowly: LPS have been associated with leptin resistance, chronic constipation, mood disorders, depression, cognitive decline, memory loss, anorexia nervosa, anxiety, chronic pain, Parkinson's, and autoimmunity.

Clinical Pearl Number 3:

Toxic load and infection drive inflammatory pathways, and newer research is showing neuropathways are particularly affected.

Clinical Pearl Number 4:

Some biofilm disruptors can also disrupt healthy gut wall barriers.

So, natural biofilm disruptors like berberine can be used because we know it doesn't impede our healthy microbiome and the integrity of epithelial junctions.

Clinical Pearl Number 5:

As we increase short chain fatty acids like butyrate, we increase GLP-1. GLP-1 stimulants like Ozempic are being prescribed in record numbers. Yet, they have a dark side. Yes, they increase satiety, but they reduce lean muscle mass, and for many people, they need to be maintained for long-term results. Sure, they give quick results, but at what cost? Speaking of butyrate, Biotics Research supplies Butyric Cal-Mag as a concentrated source of butyrate that is 3 stronger than regular butyric acid supplements. You can see two discussions to the right that outline its amazing properties. Biotics was the first company to introduce butyrate to the market and in time switched to ButyraGen™, a tributyrin complex as the source of butyrate instead of the commonly used salt. 2 capsules of Butyric Cal-Mag supplies 1000 mg of butyrate vs 6 capsules of the earlier form. The tributyrin form is more bioavailable. It's better tolerated and creates less gas and odor.

Clinical Pearl Number 6:

We make butyrate naturally by increasing fiber in our diet. The goal is 35 grams, of which about a third are soluble fibers. Soluble fiber provide food for our healthy microbiome which creates microbial diversity. Food and diversity in food is the best way to increase a diverse microbiome. It's the diversity that provide protection, communication, and modulates the immune system. In other words, it's the good bacteria that keep order in the gut, crowding out unwanted bacteria and sending messages to the innate immune system to kill the dysbiotic organisms. The GI tract is our largest endocrine organ, producing 20 hormones in response to nutrients and other microbial metabolites.

Discussions like this give new meaning to the saying, "No matter what you are treating, fix the gut first." Thanks for watching. I look forward to seeing you again next Tuesday.