

The Leaky Gut Prescription

Readers Summary:

1. What is a leaky gut?
2. What can cause a leaky gut?
3. What are the leaky gut associated conditions?
4. How might one consider treating a leaky gut?

Well, we have talked about the gut in three other blogs so far. (1) Could It Be the Gut?: An Introduction to the Brain-Gut Axis, (2) Your VAP = Brain Gut Axis Function, and (3) Why Leaky Guts Lead to MS? Click those links or go to my home page under Brain Gut Axis and find each one for a quick review. We have hinted at the leaky gut as a cause of serious human disease in all those posts. Today we get to focus on the “leaky gut” and how we might offer to treat it.

What is a leaky gut syndrome? It is the complex biochemical reactions that occur in the gut appear to be the genesis of where inflammation initially passes in to our body. We need to realize this and avoid eating the things that cause this inflammation. As I have said for close to five years now this means strict avoidance of omega 6's with a serious addition of DHA from foods, all grains and especially wheat of any kind and very limited fructose (fruit or synthetic sources to lower FODMAPS) The gut associated lymphatic tract (GALT) is the first place where our immune systems interact with the outside world. This occurs right below the intestinal brush border and is our first line of defense. It seems to me that evolution has dictated that this is precisely where the battle between health and disease begin in humans and why our immune system is set up ready on that battle front.

So clearly defense number one is to avoid the dietary sources

of inflammation I mentioned above. Many of the low carb diets out there for weight loss completely negate their benefits because they fail to limit omega six fats. A good example of that is the Atkins diet and the current generation of Weight Watchers diet. Both focus their attention on the glycemic index and glycemic load. This is admirable for "fast weight loss" but it completely fails to take leptin resistance due to omega six fats mediated via inflammatory cytokines as I have blogged on often to date. So we must be mindful that low carb does not always mean optimal.

Leaky gut syndrome is found in obesity, autoimmune diseases, over training, adrenal fatigue, fibromyalgia, and inflammatory bowel diseases like Crohn's disease, ulcerative colitis, eosinophilic esophagitis, and the most common disease of the GI tract today called GERD. GERD = gastro-esophageal reflux disease. GERD is an imbalance of omega 6 to omega 3 in the lower esophageal sphincter which allows molecular oxygen into the gut to simplify the gut flora to lead to disease. Leaky gut is also a feature of many psychiatric diseases as well. Anorexia and bulimia come to mind. Alzheimer's and schizophrenia are some others. The data is pointing to autism also being correlated with a leaky gut. The success of the GAPS diet is no surprise to many of us clinicians who have a different insight to the causes of these diseases.

So the question is now that you understand what diseases are correlated with a leaky gut, what can we do to treat this condition? I believe the number one risk factor for the initiation of this syndrome is excessive environmental EMF and artificial light. You will also begin to accumulate transition metals in your cytosol. First, you must realize as a patient that many doctors have never even heard the term leaky gut syndrome. If your doctor has worked in an ICU for anytime during they're training they will be quite familiar with this in relation to severe malnutrition, burn victims, and in long term total parental nutrition cases. The

interesting thing is that few doctors seem to realize this disease shows itself far more commonly in our clinics than it does in the ICU. I believe it is the most common syndrome I see in my neurosurgery clinic. I believe it is the main etiology for degenerative vertebral disc disease in the USA today.

Leaky Gut Associations:

A. Foods high in the glycemic index, and most dairy products raw or pasteurized.

B. Foods high in refined flours, processed foods with low fiber contents (Amylose high foods)

C. Foods high in caffeine that are chronically used.

D. Excessive use of alcohol or long term use or abuse of antibiotics.

E. Chronic use of drugs like aspirin or ibuprofen, and all proton pump inhibitors (all NSAID's too)

F. Strong association with mercury laden foods or mercurial environmental toxins.

G. Any disease that causes an altered consciousness (trauma, delirium, dementia, stroke, SAH)

H. Chronic or severe acute food allergies. Severe food poisoning can also do this.

How do we treat it? Always consult with your doctor first! Then ...

A. Reverse the etiologies in A-H above.

B. Consider use of coconut oil as the main fat in the diet until the syndrome is reversed.

C. Liberal use of probiotics if the patient is conscious. Use fermented carbohydrates in natural foods as the first option before going to live culture additives. Examples are

sauerkraut, pickles, Kimchi, kombucha, yogurt, kefir, artichoke and horseradish, rosemary, turmeric, oregano. these all have high levels of cysteine in them.

D. Consider use of probiotic additives with Lactobacillus acidophilus, Bifido Bacteria, Saccharomyces Boulardi because non of them use transition metals in their life cycle.

E. You might also supplement with Fructo-oligosaccharides (FOS) powders and supplements. These compounds are found naturally in the foods mentioned above in part C, but one can buy (FOS) and use them as well. The FOS helps feed the probiotic bacteria in part D mentioned above and allows them to flourish in our gut flora and replace the species of bacteria that foster inflammation at the brush border.

F. Consider supplementing with L- Glutamine, but I like the use of iodine laden bone broths best. Real food always trumps supplements. Sir Hans Krebs, famous for discovering the Krebs cycle, also found that glutamine improves functioning of the intestinal brush border, and the GALT. Glutamine is critical for immune regulation of intestinal IgA. (Fukatsu et al. 2001) IgA is an antibody that that attacks virus and bacterial pathogens in saliva, tears, and in mucous. Glutamine also normalizes the effect on TH-2 type IgA stimulating cytokines associated with the generation of allergy responses. (Kudsk et al. 2000). /the TH-2 type cells are tied to the endogenous endorphin and endocannabinoid systems. They are also tied to MSH levels in the brain which links it directly to leptin.

G. Other supplements you might use to combat this syndrome: Aloe Vera 10 grams 2 tsp three times a day. This is a major natural fiber component. This is NOT to be used in cases with Crohn's, UC, or intestinal blockages. You might also use N-acetyl-cysteine in combo with vitamin C. You might use 600 mgs of NAC twice a day with 1000 mgs of vitamin C. For severe prolonged leaky gut or autoimmune conditions IV glutathione treatment hold a lot of promise too. You would be more wise

to add food high in cysteine to your diet because glutathione is difficult to get into cells. It also requires optimal B12, folate, and betaine levels when treatment is on going. Both oral and IV use of NAC or glutathione also uses up zinc as a co factor, so I usually recommend Zn supplementation when it is used. NAC is the precursor for glutathione which is the main antioxidant protectant of our body. People with serious skin manifestations of the leaky gut like psoriasis and eosinophilic folliculitis should consider NAC because it directly blocks IL-4 and this in turn is the main factor in producing IgE antibodies. This is a huge issue for vegans.

IgE antibodies are made in hay fever, asthma, anaphylactic shock, and atopic skin diseases. If the asthma is severe, one can measure the amount of nitric oxide directly in the expired air and it will be elevated. This is also true in cases of emphysema, COPD and cystic fibrosis. (Corradi et al. 2001) The NAC will form glutathione and it directly combines with the nitric oxide to create nitrosothiols. This binding reduces the inflammatory effects of the NO in the body quickly to limit disease. This is also critical within the intestines as well in leaky gut.

H. Magnesium 400-1200 mgs at night, Zinc 25-75 mgs a day and Coenzyme Q10 400-1200 mgs a day (depending upon severity of the disease) are all major cofactors in the stress response and used up quickly in the leaky gut syndrome. They could all be replaced liberally.

I. Consider liberal use of omega three supplements and increase of omega three laden foods.

J. Consider use of licorice root called deglycyrrhizinated licorice root (DGL). The dose here is 500mgs of a 10:1 extract three times a day. This is an adaptogen that normalizes cortisol levels, but this form is extremely helpful in leaky gut because it does not have any of the side effects of using whole licorice such as low potassium, low sodium, edema, high blood pressure and palpitations.

K. For resistant cases one might consider the use of a vagal nerve stimulator to increase the neurologic protection afforded by the tenth cranial nerve by keeping the brain's main gut "security camera" in the constant on position. This is controversial but the company that makes the stimulators now has clinical trials on going for this indication and for the treatment of obesity due to gut inflammation.

L. For people with resistant leaky gut who can't afford the stimulator you may want to ask your mom if you were breastfed and for how long? If the answer is no then consider the use of colostrum as a consistent supplement. Body builders have used it for years to allow them to over-train while closing the permeability of their brush border with the colostrum. It is that effective. Many people do not realize that exercise can open your gut to inflammation. It can. The reason why colostrum works so well is because it loaded in proline. Celiac disease permeability is driven by intestinal T cells responsive to proline-rich gluten peptides that often harbor glutamate residues formed by tissue transglutaminase-mediated glutamine conversion.

From previous studies, it is clear that celiac lesion-derived, gluten-reactive T cells predominantly recognize peptides that cluster within the proline (Pro)-rich regions of gluten proteins, and these peptides contain glutamate (Glu) residues formed in vivo through tissue transglutaminase (TG2)-mediated deamidation of glutamine (Gln) residues. The negative charges introduced by this deamidation process generally increase the binding affinity of gluten peptides to DQ2.5.

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Additional Resources

- Could It Be the Gut?: An Introduction to the Brain-Gut Axis
- Your VAP = Brain Gut Axis Function
- Why Leaky Guts Lead to MS?
- EMF 2: Einstein, Meet Leptin
- Brain Gut 11: Is Technology an Achilles Heel?

Cites:

0. Sollid, L. M. 2002. Coeliac disease: dissecting a complex inflammatory disorder. *Nat. Rev. Immunol.* 2: 647-655.

1. Arentz-Hansen, H., S. N. McAdam, Å. Molberg, B. Fleckenstein, K. E. Lundin, T. J. Jørgensen, G. Jung, P. Roepstorff, and L. M. Sollid. 2002. Celiac lesion T cells recognize epitopes that cluster in regions of gliadins rich in proline residues. *Gastroenterology* 123: 803-809.
2. Arentz-Hansen, H., R. Korner, Å. Molberg, H. Quarsten, W. Vader, Y. M. C. Kooy, K. E. A. Lundin, F. Koning, P. Roepstorff, L. M. Sollid, and S. N. McAdam. 2000. The intestinal T cell response to