Leaky gut syndrome has gained some considerable attention in the health industry, despite still not being entirely recognized by many medical professionals. This can be viewed by those who recognize it as an opportunity to fix this common and particularly life affecting problem in those patients that present its characteristics. Leaky gut is the generic term for an abnormally increased intestinal permeability. This condition results in an abnormal amount of absorption of materials that should not otherwise pass through the intestinal lumen and into the bloodstream. Some of the substances that make it through the compromised intestinal barrier include endotoxin, bacteria, antigens and inflammatory mediators leading to a host of potential problems whether it be directly or indirectly through immune system activation and subsequent inflammation. (Fasano et. al, 2005). Paradoxically, through the enhanced absorption of these offending substances, malabsorption eventually tends to occur of important nutrients secondary to intestinal wall atrophy and inflammation. All of these insults can result in a slew of pathologies in the affected patient that can be acute or chronically mediated, localized or systemic in nature. Some of the more common offenders that are often attributed to other conditions but can be linked to leaky gut include autoimmune diseases, diabetes, cardiovascular disease, multiple bowel-related problems, psychological conditions and joint problems (Mu et. al 2017).

Interestingly, the most common cause of increased intestinal permeability defects observed in leaky gut syndrome patients are due to intestinal inflammation. Mucosal oxidative stress, daily stress, non-steroidal anti-inflammatory drugs, alcohol consumption, cow's milk intolerance, small intestine bacterial overgrowth (SIBO), pancreatic insufficiency and intestinal infections are all potential sources of this inflammation in what appears to be a never ending

cycle or positive feedback mechanism of inflammation leading to conditions that cause more inflammation. It becomes quite apparent that intervention is paramount in these cases in order to break the cycle, restore gut health and ideally result in resolution of the associated conditions present.

Assessment strategies for leaky gut syndrome appear to be open to interpretation at the present time. It is largely a diagnosis that is made clinically through the presence of some key indicators. A thorough patient history including symptomology, detailed dietary habits and medication use can provide keen insights into presence and severity of the condition. Assessment tools that are often used to assist in diagnosis are the **IgG food intolerance test** and the urinary indican test or Obermeyer test (Raman, 2019). The indican test is an indicator of intestinal toxemia and anaerobic bacteria, where indican is produced when bacteria in the intestine act on the presence of tryptophan. Normally urinary indican should be quite low, where elevated levels can signify maldigestion and malabsorption of protein. Keeping in mind that other conditions can raise urinary indican levels such as hypochlorhydria, stomach cancer, insufficient digestive enzymes, malabsorption syndromes, SIBO, intestinal obstruction. If it is high in the correct context without more severe pathology presentation, it can be a useful indicator of a leaky gut.

A more popular test is the **IgG food intolerance** test which measures the immune system activity in response to the presence of certain foods in the diet. (Mu et al, 2017) IgG, commonly associated with type 3 hypersensitivity reactions, is a chronic inflammatory marker that can provide insight into how much and what types of foods are triggering an inflammatory response. In theory, when removing foods that test strongly positive on IgG testing, one is removing an agent directly contributing to inflammation, whether it be the initial cause or a contributing factor.

A nutritional protocol to correct leaky gut syndrome involves facilitating the normalization of intestinal permeability and mucosal health. Another key component to an effective nutritional protocol here is removal of the offending agent or agents. Guidance can be more uniquely tailored to the individual patient once **IgG food intolerance testing** has been ordered and adequately interpreted. These tests can measure up to 220 types of food antigens present in blood as well as the degree of the inflammatory response elicited. It can be a valued assessment tool as previously discussed and also be used to construct unique diet plans or guide modifications to existing eating paradigms. The typical leaky gut protocol is one that is rich in antioxidants, fiber, mucosal nutrients, fermented foods, is balanced and avoids food sensitivities. (Raman, 2019)

The prognosis associated with leaky gut syndrome is quite variable. It has become evident that it can cause inflammation and damage to different parts of the body including endocrine, immune system, cardiovascular system, musculoskeletal system and even the brain. The end organ effects and total body damage likely is a time and exposure dependant process. Clearly the goal is to identify the symptomology associated with leaky gut in as early a stage as possible, limit end-organ and systemic damage and reverse any if possible. However, if ignored, many subclinical problems can smolder into chronic ones leading to a greater incident of irreversible damage to the bowel and other organ systems. According to obtainable data, clinical practice and anecdotal evidence, leaky gut syndrome treatment is effective when healthcare practitioner recommendations are implemented and accurately followed by the patient.

In lieu of the potential mineral deficiencies that can and most often exist in the context of leaky gut, Hair Mineral Analysis (HMA) is a great test that can also provide some suggestion into one's digestive health and sequele. Low mineral profiles on HMA are more likely caused by digestive disturbances such as GERD, hypochlorydria, leaky gut or intestinal dysbiosis. Understanding this pattern of mineral deficiencies reflected in an HMA can provide a broader understanding of leaky gut and it's far reaching impact on the body's mineral status. In addition to multiple mineral deficiencies, there is also the opinion that toxic metals can potentiate leaky gut syndrome and therefore screening one for heavy metal toxicity in an HMA can give some insight into potential risks and causes for gut disturbance. (Wilson, 2010)

It is my observation that more people than ever before are suffering with undiagnosed leaky gut syndrome. There have been more advancements in detecting and treating this condition, and it is our responsibility as holistic health care providers to be aware of this condition and how to perceive, test and treat it. The IgG Food Sensitivity and HMA test are great tools to use in your office for your patients as it can clearly give your patients an understanding of their gut health, mineral and toxicity profile and foods that are inflammatory creating. I have been using these tests in my office for over 8 years and I have seen the changes to people's gut health and overall health once implemented. I am very passionate about this subject and testing. If you require help with interpretation and patient care, don't hesitate to reach out.

Happy to help you with patient success,

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