

BROKEN IMMUNITY AND OBESITY

We all understand that when there is cooperation or concordance of the cells and systems in our bodies, then we are in good health. When there is discordance among these systems, then our health can suffer. We cannot talk about broken immunity or obesity (both signs of discordance) unless we talk about health of the gut barrier or the gut microbiome. We know that somewhere between 70 and 80% of the immune system is actually harbored in the gut lining. How does this immune system get established and develop? This happens very early in life in the birth process. Babies that are born by vaginal birth get microbes from their mothers that help to establish the diversity of their gut microbiome. Additionally, babies that are breast-fed are able to nourish their developing immune systems. This is especially important in the first 24-48 hours after birth and can set the stage for lifelong strong immunity.

So, how does one's immunity get altered or broken? As life moves on for all of us we get busier and sometimes more stressed. We may be introduced to antibiotics and/or medications early in life. Our families may not always have time to prepare nutritious, well-balanced meals. This can lead to a disturbance in the integrity of the healthy gut microbiome and lead to "leakiness" of the gut or dysbiosis. Unhealthy microorganisms start to overpopulate the gut and outnumber the good microbes. We become more susceptible to immune dysregulation and, believe it or not, body composition changes.

Obesity and being overweight is not just about how many pounds we weigh on the scale, it is also about our body composition or adipose tissue, skeletal muscle, visceral fat and intra and extracellular water. Adipose tissue produces substances that can cause inflammation. Research shows that early obesity may be related to antibiotic use and environmental factors, not just eating poorly or too much. Environmental factors such as overuse of disinfectants and chemicals in our homes and workplaces may be contributing to changing the diversity of our gut microbiome and adipose tissue.

What else can cause a disruption in the gut microbiome? Chronic use of PPIs or proton pump inhibitors (nationally, one of the most over-prescribed medications). These are generally prescribed for stomach acid suppres-

sion but can cause a disruption of the microbes and a deficiency in the absorption of certain nutrients. With PPIs, we see a deficiency in vitamin B12, vitamin C and iron. How does this connect to obesity? Overtime, long term depletion of these vitamins and minerals could lead to anemia and an overall decrease in energy. If we have less energy, we may do less physical activity and perhaps choose foods that we may think will help us feel better. These may include sugar-laden energy drinks and higher glycemic foods. Ultimately, this really only leads to weight gain.

Long term obesity can also lead to metabolic changes such as changes in glucose and insulin levels and cardiovascular disease, further contributing to inflammation of adipose tissue. So, weight loss is not just about cutting calories when we are dealing with weight loss resistance like inflammation. Of course, always starting with changes in diet is key. We would also need to address sleep, stress and exercise when tackling obesity. Poor sleep habits and over or under exercising can result in further inflammation in the gut and the body.

In my office, we talk about gut restoration using the **5R program**. The 5R gut restoration program helps to restore optimal function of the gut, relieve uncomfortable digestive symptoms and restore cooperation or concordance of all the body systems. This program always starts with addressing stress, sleep, exercise and diet by making specific lifestyle changes. We may begin by **Removing** microbes in the gut that shouldn't be there using specific formulas and medical foods. **Replacing** much needed digestive factors such as fiber (to feed good microbes) and digestive enzymes to support pancreas, liver and gall bladder function. We may then **Reinoculate** the GI tract with specific beneficial bacteria (probiotics) that fit the needs of each individual patient. Surprisingly, probiotics are not a "one size fits all" sort of supplement. Then focusing on **Regenerating** the gut mucosa or lining with specific amino acids and nutrients may be the next step. This protocol can last anywhere from 30-90 days, depending on the needs of each individual patient. Lastly, **Retaining** all of the benefits we have achieved (for life) from the program to enable us to continue to work on improving body composition and overall immunity.

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