ACUPUNCTURE Today

CLINICAL CORNER

GI Lymph and Liver Dysfunction Leading to Obesity: TCM Solutions

Only a minimum amount of body fat is necessary for a healthy body to support its energy source, as well as hormonal, reproductive and immune systems. However, the accumulation of too much fat can impair the body's movement, flexibility and appearance; and more importantly, increase the risk of developing heart disease, stroke and type 2 diabetes.

Obesity is usually caused by eating too much and moving too little. However, other factors can affect body weight. Among them, liver and digestive tract health are the most important determining factors. It has been found that patients who are overweight or obese usually also have diseases such as Crohn's, ulcerative colitis and NAFLD [nonalcoholic fatty liver disease]. To address the obesity issue, the GI or liver problem has to be considered as well, in addition to a controlled diet and increased exercise.

The GI Lymphatic System and Obesity

Seventy million people in the United States are affected by digestive diseases every year. GI dysfunction is often a comorbidity with numerous non-intestinal conditions. GI lymphatic system dysfunction is particularly linked to obesity and metabolic syndrome.

Lymphatics perform essential transport and immune cell regulatory functions to maintain homeostasis in the GI system.[2] GI lymphatic networks both regulate interstitial fluid balance and transport lipids. GI lymphatics also fulfill important mucosal immune functions because the absorptive surface is immense and densely colonized by bacterial commensals.

The GI lymphatic system not only collects fluid using collecting lymphatic vessels, but also carries, absorbs and transports dietary lipids. Although most types of dietary nutrients in the small intestine enter the blood vessels to drain into the liver for processing, dietary lipids or fats are passed on to the GI lymphatic capillaries.

Dilated or restricted lymphatics affect fat absorption and transportation.[1] A lymphatic functional sluggishness in the GI can result in overabsorption of fat. Animal studies have found that GI lymphatic defects provoke adult-onset obesity, and animals will progress to elevated insulin resistance.[3]

Abnormal lymphatic structure and function contribute to adult-onset obesity through multifactorial issues involving the gut microbiota, as well as the enteric nervous system (ENS). When the lymphatics become dysregulated, this alters the gut bacteria population, causing an absence of commensal microbes, which further affects the communication of the ENS with the brain – leading to the accumulation of fat masses.[4]

The ENS senses and reacts to the dynamic ecosystem of the GI tract and communicates to the brain via the brain-gut axis. The brain-gut axis is involved in many regular functions and systems

within our body, including eating. When we need to take in food, before a meal on an empty stomach, the peptide hormone ghrelin is released from the gastric mucosa to stimulate the brain to notify the person that they're hungry.

Many undesirable gut bacteria can manufacture ghrelin.[5] Overpopulation of undesirable gut bacteria will produce an excessive amount of ghrelin, which leads to increased hunger, and cravings for food, sugars, sweeteners and carbohydrates, causing bloating, poor digestion and weight gain.[5] This can also cause poor immunity with overgrowth of pathogenic bacteria, promoting gut inflammation and infections.[2]

The Liver and Obesity

The liver is an important organ that plays a central role in the body's metabolism. In carrying out fat metabolism, one of the key functions includes picking up the long-chain fatty acids from the blood and breaking them down into a series of two-carbon acetate units. The liver breaks down many more fatty acids that the hepatocytes need. The extra-large quantities of acetoacetate are exported into the blood.

Liver damage and reduced function can cause many symptoms such as headaches, nausea, insomnia, mood swings, and irritability. Liver dysfunction can also reduce the activity of the liver's fatty-acid breakdown, causing fat accumulation in the liver in the form of triglycerides. The excess triglycerides can be released into the blood in the form of VLDL. These extra fats will then be deposited into organs such as the heart, kidneys or stomach. Therefore, weight gain caused by poor liver function is especially apparent around the belly.

TCM Approaches

The wellness recommendation for weight control includes formulas that help clear phlegm damp and remove *qi* stagnation in the GI tract, as well as nurture liver *yin*. Herbal ingredients such as perilla fruit have been shown to have strong antibacterial effects and anti-inflammatory activities, which help restore healthy gut microbes.[6] Cassia seed has been shown to increase energy metabolism, lower total cholesterol, increase lipid export, and reduce fatty liver deposits.[7]

These herbs, including others that address both the *qi* stagnation and liver *yin* deficiency, can help patients experience less bloating, better digestion, increased emotional stability and stress tolerance, enhanced energy levels, and a change in eating habits with fewer cravings for sugar, sweeteners, and carbohydrates.

Case Study: Successful Food Craving and Weight-Loss Achievements
— Arianne Missimer, DPT, Dietician

A 54-year-old female patient was seeing Dr. Missimer for weight loss, high cholesterol and menopause. The patient complained of unhealthy eating habits utilized as a coping mechanism; as well as recent weight gain. The patient had tried multiple diets and could not lose weight consistently.

Dr. Missimer had wanted to address the patient's hormones while creating healthy eating techniques for the patient. She recommended the patient follow the NOOM protocol for structure to her eating; along with herbal formulas including perilla fruit, cassia seed and 10 other Chinese herbs. These were recommended to help support the patient's hormones as she goes through menopause; as well as restore the digestive tract to help stop the patient's cravings.

After the first month, the patient had lost eight pounds with less sugar crashes each day. She reported she no longer felt the urge and cravings for sweets in her diet. After the third month on the program, the patient was excited to report she had lost 15 pounds. She no longer felt like she had to deprive herself of food to lose weight, but rather felt more balanced. Her cholesterol levels were looking much better and within the normal range. The patient was very satisfied with her results.

References

1. Alexander JS, Ganta VC, Jordan PA, et al. Gastrointestinal lymphatics in health and disease. Pa*thophysiology*, 2010;17(4):315-335.
2. Yoo BB, Mazmanian SK. The enteric network: interactions between the immune and nervous systems of the gut. *Immunity*, 2017;46(6):910-926.
3. Food Forum; Food and Nutrition Board; Institute of Medicine. *Relationships Among the Brain, the Digestive System, and Eating Behavior: Workshop Summary*. 2. Interaction Between the Brain and the Digestive System. Washington, D.C.: National Academies Press, 2015.
4. Cifarelli V, Eichmann A. The intestinal lymphatic system: functions and metabolic implications. *Cell Mol Gastroenterol Hepatol*, 2019;7(3):503-513.
5. Zheng D, Liwinski T, Elinav E. Interaction between microbiota and immunity in health and disease. *Cell Res*, 2020;30:492-506.
6. Ahmed HM. Ethnomedicinal, phytochemical and pharmacological investigations of Perilla frutescens (L.) Britt. *Molecules*, 2018;24(1):102.
7. Dong X, Fu J, Yin X, et al. Cassiae semen: a review of its phytochemistry and pharmacology (review). *Molec Med Rep*, 2017;16(3):2331-2346.

©2024 Acupuncture Today™ All Rights Reserved