Chronic Inflammation

What is inflammation?

Inflammation is the body's normal response to infection or injury. Inflammation involves activation of certain hormones and other chemicals, which act together to clear infection and repair damaged tissue. Once the infection is cleared or tissue is repaired, the inflammatory response recedes.

What is chronic inflammation?

Chronic inflammation occurs when the inflammatory response remains in the "on" position, despite the fact that there is no acute injury. The long-term effect of this constant state of "alert" of the inflammatory response is damage to healthy tissues, leading to disease.

What contributes to chronic inflammation?

The cause can be from many sources, involving complex interactions of chemicals and hormones in the body.

- Dietary causes of chronic inflammation are related to our modern diet, high in processed convenience foods, containing refined carbohydrates and unhealthy fats.

  Consuming products containing refined flour, sugar, and high-fructose corn syrup will cause unnaturally sharp elevations in insulin levels. When this occurs repetitively, it can lead to chronically elevated insulin levels, which then leads to inflammation through complex cellular processes.

  Most polyunsaturated vegetable oils, like safflower, sunflower, corn, and soy oils are high in omega-6 fatty acids, which the body converts to *pro*-inflammatory substances. We actually need these in small quantities (for mounting acute inflammation that fights infection, etc). The body also needs omega-3 fats (found in fish, walnuts, flaxseed), which have an *anti*-inflammatory effect. Experts suggest that an ideal ratio of omega-6 to omega-3 fats is between 1:1 and 2:1. The typical American consumes a ratio of between 10:1 and 25:1! Another type of fat that is particularly unhealthy, is trans-fat, commonly used by the food industry to increase shelf-life of packaged foods. Trans-fats have damaging effects on cell membranes and bodily processes, the net effect being to increase inflammation in the body.

- Environmental causes of chronic inflammation are allergens and toxins we are exposed to on a daily basis. Smoking is a big one that can be eliminated voluntarily, but we also are exposed to many other substances in the environment that may have a cumulative effect on the immune system and result in chronic inflammation.

- Chronic Stress can cause inflammation because it is associated with increased levels of the stress hormone, cortisol. This hormone influences your insulin and metabolism, as well as your immune system.

Why should you care?

A number of medical conditions have been linked to chronic inflammation in the body. Some of them are: Alzheimer's Disease, Heart Disease, Stroke, Cancer, Asthma, Obesity, Chronic Pain, Type 2 Diabetes, Inflammatory Bowel Disease, Autoimmune Diseases, (such as Rheumatoid Arthritis and Lupus), Attention Deficit Disorder, Depression, and PMS (Premenstrual Syndrome).

How is obesity related to chronic inflammation?

The connection between excess body fat and inflammation is partly related to insulin resistance. A diet containing large amounts of highly refined flour, sugar, and high fructose corn syrup leads to repetitive large insulin spikes and, eventually, chronically elevated insulin levels. This leads to our cells becoming resistant to insulin, so the body produces more and more insulin. This condition leads to fat deposition in the abdomen. Fat cells produce pro-inflammatory compounds that can disrupt metabolic processes.

How do you know if you have chronic inflammation?

Individuals with chronic inflammation may not recognize specific symptoms. It can be a silent menace. However, some of the signs could be body aches and pains, chronic nasal congestion, breathing difficulties, nausea, diarrhea, gas and bloating, skin rash or irritations, puffiness and swelling, and obesity.

High Sensitivity C-Reactive Protein (hsCRP) is a protein in the blood that increases when inflammation occurs in the body. Measurement of hsCRP can signal inflammation. The upper limit of normal for hs-CRP is 1.0. Values above 3.0 are abnormal.

What can you do to lower your risk of chronic inflammation?

But more and more, we are learning of natural, healthy ways of reducing inflammation. Things we can control, such as the types of food we eat, how much exercise we get, and our stress level influence the amount of inflammation we have in our bodies. Through dietary and lifestyle adjustments, you can turn this condition around in a matter of weeks to months. Here are some recommendations for reducing inflammation that you can begin *right now*, to begin the healing process:

1. Adopt a Mediterranean/Anti-inflammatory Diet. This diet is based on the traditional diet of the inhabitants of the geographic area surrounding the Mediterranean Sea. The main components of the diet are healthy fats (olive oil, nuts), fish (to give the body more anti-inflammatory omega-3 fats), whole grains (avoiding refined grain products), and a wide variety of fresh vegetables and fruits. Studies have shown that those who maintain a Mediterranean diet have a lower incidence of the chronic diseases typically associated with inflammation. This is not a "diet" in the sense of changing your eating habits for a few months to lose weight, and it's no fad diet. This is a dietary regimen, a lifestyle for you (and your family) to follow for a lifetime. You will find this diet is quite enjoyable, and allows a large variety of foods. A good resource for education on this diet is *Oldways*, a nonprofit food and nutrition education organization. The website, oldwayspt.org contains much helpful information about the Mediterranean diet, including lots of great recipes.

2. Take a fish oil supplement daily. Omega-3 fats found in fish oil have been shown to reduce inflammation in the body. Choose a brand that is molecularly distilled to eliminate metals and toxins.

3. Take a vitamin D supplement. Vitamin D has anti-inflammatory properties and is critical for immune system function. It is difficult to get enough vitamin D in the diet. Our skin makes vitamin D with sun exposure, but use of sunscreen and lack of sun exposure reduces production. If your vitamin D level is low, vitamin D supplement is recommended. For general health maintenance, 1000 IU daily is recommended.

4. If you smoke, stop. We can help. Ask for an appt with one of our primary care physicians for smoking cessation assistance. There are proven strategies and medications to help you quit.

5. Reduce stress. If your life is stressful, analyze what makes it so, and take steps to decrease stress in your life. This may be as simple as setting aside 30 minutes of "me time" per day, or as difficult as reordering priorities, or even a career change. Exercise, yoga, and mindfulness meditation can help manage daily stress.

6. Exercise regularly, at least 30 minutes, at least 3-5 times per week. Not only does this promote a healthy weigh and heart, but is good for mental and emotional health as well, all of importance in reducing inflammation.

7. Get plenty of sleep. Most adults need 7-9 hours for full rejuvenation and optimal health. Wind down and go "screenless" at night, as bedtime approaches.