

Chronic Inflammation: Common Denominator in Western Diseases

Inflammation: Friend or Foe?

Acute inflammation is a life saving healing and repair mechanism, without which we would succumb to our environment. In the presence of an infection or injury the inflammatory response is swiftly initiated. What follows is well orchestrated release of white blood cells and various cellular messengers called cytokines directed at the invading pathogen or injury. Once the pathogen is contained and healing well underway, the inflammatory response is turned off as definitively as it was turned on.

However, chronic inflammation can be initiated by seemingly innocuous circumstances such stress, lack of sleep or the over eating of refined carbohydrates and overcooked foods. Chronic inflammation is also involved in the pathology of ominous conditions inflammation smolders out of control, damaging vital tissues and organs. Inflammation then becomes a destructive pathologic enemy instead of a health preserving process. In fact, inflammation has such drastic consequences that higher levels of inflammatory markers have been found to be associated with a greater risk of death in a study published in the *American Journal of Medicine*. Chronic inflammation is a sign of a complex medical problem, of which its' treatment is an important goal to restoring health.

Inflammation Links Heart Disease and Diabetes

The link between inflammation and cardiovascular diseases like atherosclerosis and heart attacks has long been established. More recently hypertension has been associated with chronic inflammation as well. An accurate and inexpensive means to evaluate chronic inflammation in cardiovascular disease is a blood test called high sensitive C-reactive protein. The test is jointly endorsed by the American Heart Association and the Center for Disease Control.

Glycation end products occur when elevated blood sugar binds with various proteins causing damage to kidneys, eyes, blood vessels and other tissues. Glycation end products explain in large part the pain and sensory defects experienced in the hands and feet of uncontrolled diabetics as well as diabetes induced cardiovascular complications. The presence of an elevated C-reactive and the cytokine interleukin-6 can predict the risk of developing diabetes and signify inflammation.

How what You Eat Modulates Inflammation

Dietary choices play a big role in determining the level of chronic inflammation. It is no more important than in the presence of chronic illness, aging, and chronic stress. The over consumption of refined carbohydrates and high glycemic foods promote inflammation by increasing a chemical called arachidonic acid. High glycemic foods also cause a reflex surge in insulin, initiating an inflammatory response of its' own. Other foods containing large amounts of arachidonic acid include poultry, beef, egg yolk, polyunsaturated and saturated fats. High levels of arachidonic acid promote an increase in a chemical mediator called prostaglandin E2 which, in turn, increases the inflammatory response. Excessive consumption of omega-6 fatty acids have the same effect.

Eating lots of whole foods, fresh fruits and vegetables, and cold water fish in place of the above mentioned foods will lower prostaglandin E2 and favor increases in prostaglandin E1 and E3 which have an anti-inflammatory effect. Stress reduction, blood sugar regulation, and proper sleep should also be maintained. Several supplements have proven invaluable in lowering chronic inflammation. These include omega-3 fatty acids such as fish oil, especially the DHA fraction, the hormone DHEA, vitamin K, gamma-linolenic acid, curcumin, *Boswellia* and others. The choice of which supplements to use can often be clarified by cytokine testing.

As a Naturopathic Doctor, I keep in mind that inflammation is not the beginning or end of a disease process but rather a sign of a deeper issue needing to be addressed functionally. The presence of inflammation creates the opportunity for patients to experience the superior value of lifestyle and nutritional intervention over drug therapy for their health. Along with treating the underlying condition, testing for inflammatory markers such as C-reactive protein and levels of cytokines may reward for a custom tailored strategy to lower inflammation along side treatment of the underlying disease.

