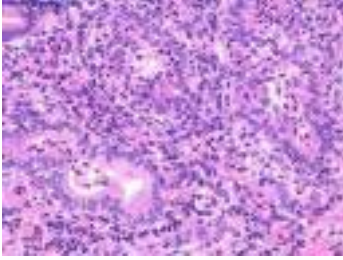


## INFLAMMATION PART 1: UNDERSTANDING THE INFLAMMATORY RESPONSE

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The process of inflammation is a natural phenomenon that enables our bodies to fend off various disease-causing bacteria, viruses, parasites, harmful environmental pollutants, and injury. It is a protective and restorative response that helps keep us healthy - most of the time. Unfortunately, when inflammation becomes excessive or uncontrolled, we begin to see delayed wound healing and the development of chronic inflammatory conditions. Medical science is just starting to realize the potential negative health implications of excessive and prolonged inflammation. This article is the first part of a two part series on inflammation. Part one will focus on understanding the inflammatory process and the impact it has on human health.

To understand inflammation and health, we must first explore the basic mechanism of the inflammatory response. An inflammatory response in the body is important for protection and repair of injured tissue. When you catch a cold, sprain your ankle, or are exposed to an environmental pollutant such as cigarette smoke, a chain of events are triggered in your body known as the “inflammatory cascade”. The familiar signs of normal inflammation - local redness, swelling, heat, pain, and loss of function - are the first signals that your immune system is being called into action. Pro-inflammatory hormones are released at the injury site, which stimulates the release of white blood cells, antibodies, and other chemical compounds and mediators that help clear out infection, damaged tissue, and initiate the healing process once the threat is neutralized. Acute inflammation that starts and ends as intended signifies the proper and essential inflammatory response. It is a precision-guided defense response that targets the area of “injury”. Symptoms of inflammation that don’t recede indicate that the immune system is stuck on high alert. The inflammatory response becomes a concern when it leads to chronic inflammation.

Chronic inflammation is an inflammatory response of prolonged duration (weeks, months, indefinite), whose extended time course is provoked by persistence of the causative stimulus to inflammation in the tissue. The exact nature, extent and time course of chronic inflammation is variable, and depends on a balance between the causative agent and the attempts of the body to remove it. The chronic inflammatory process inevitably causes tissue damage and is accompanied by simultaneous attempts at healing and repair. Over time, it may become more difficult for the body to repair and regenerate the original tissue in areas of chronic inflammation, which can lead to scarring and even tissue death. The stimulation of nerve fibers from a chronic inflammatory process can be a significant contributor to pain. Other symptoms of chronic inflammation can include fever, fatigue, weakness, irritability, depression, and weight gain.



Over the last five years, researchers have found runaway inflammation in most major health problems. For example, white blood cells, which release large amounts of inflammation-causing substances, play an early role in damaging artery walls and setting the stage for cholesterol deposits and heart disease. Testing for C-reactive protein (CRP) in blood is one test used for measuring inflammation in the body. In a major study published by the *New England Journal of Medicine*, people with elevated CRP levels were four and a half times more likely to have a heart attack. High CRP levels have also been measured in people with diabetes and pre-diabetes and in people who are overweight.

Severe and chronic inflammation has not only been linked to heart disease and diabetes, but also Alzheimer's, and some cancers. It also plays a role in other illnesses and conditions such as, asthma, irritable bowel syndrome, and allergies. It has been demonstrated that individual's with Alzheimer's being treated simultaneously with anti-inflammatory medications for arthritis or heart disease tended to develop full-blown symptoms of Alzheimer's later than those who were not being treated with anti-inflammatory drugs. Back in the 1860's, renowned pathologist Rudolf Virchow speculated that cancerous tumors arose at the site of chronic inflammation. More than a century later, oncologists and researchers are paying more attention to the possibility of mutations and inflammation as mutually reinforcing processes that left unchecked, can transform normal body cells into potentially deadly tumors. Cancers in this respect can be looked at as wounds that never heal. There are also those "inflammatory" diseases categorized as autoimmune. In these diseases, the stimulus to chronic inflammation may be a "normal" tissue component. This chronic response results because of an abnormality in the regulation of the body's immune response to its own tissues. As a result, the body mounts an inflammatory response against itself. Examples of autoimmune disorders include Multiple Sclerosis, Rheumatoid Arthritis, Lupus and Graves Disease.

Inflammation is a normal and essential biological process that protects us and heals. Chronic inflammation, on the other hand, is abnormal, and can potentially lead to disease. There has been a dramatic shift within medical research toward investing more money and time into the field of immunology, and exploring the link between inflammation and disease. Inflammation generally tends to increase with age, making us more susceptible to disease. Chronic inflammation may very well be the engine that drives many of the most feared illnesses of middle and old age. In the second part of this two part series on inflammation, learn what strategies you can employ in adopting an Anti-Inflammatory Lifestyle.

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