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Characteristics of Inflammation

Low-grade inflammation and activation of the innate immune system both play a key role in the pathogenesis of a number of chronic disorders such as Alzheimer's disease, rheumatoid arthritis, Lupus, osteoarthritis, multiple sclerosis, atherosclerosis, and many other autoimmune diseases. These chronic diseases all contain an inflammatory component. Many causes of inflammation exist such as infection, tissue damage/necrosis, exogenous or endogenous substances, and immune reactions.

Inflammation is the body's nonspecific defense and healing mechanism for damaged tissue or infection. It can be characterized by five cardinal signs: heat (*calor*), pain (*dolor*), redness (*rubor*), swelling (*tumor*), and loss of function (*functio laesa*). Inflammation occurs due to changes in metabolic and chemical activity and creates an environment conducive to tissue healing and hostile to invading pathogens. It is the immune system's first response to injuries such as physical trauma, burns, or infections. Infections that can cause inflammation are bacterial, mycoses (fungal), viruses, and parasites (e.g. Helminth). Tissue damage/necrosis can occur when blood is cut off to tissues and they become ischemic (without oxygen). Exogenous bodies are foreign substances, such as a bullet, sutures, or slivers. Endogenous substances come from inside the body. Gout, made from urate crystals, is an example of an endogenous substance that causes inflammation. Immune reactions can cause inflammation as well. Autoimmune diseases and allergies are hypersensitivities that can lead to inflammation.



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