Abstract

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Role of vascular inflammation in coronary artery disease: potential of anti-inflammatory drugs in the prevention of atherothrombosis. Inflammation and anti-inflammatory drugs in coronary artery disease.

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Abstract

Coronary artery disease (CAD) and acute myocardial infarction (AMI) are inflammatory pathologies, involving interleukins (ILs), such as IL-1β, IL-6 and tumor necrosis factor (TNF)-α, and acute phase proteins production, such as for C reactive protein (CRP). The process begins with retention of low-density lipoprotein (LDL) and its oxidation inside the intima, with the formation of the "foam cells." Toll-like receptors and inflamassomes participate in atherosclerosis formation, as well as in the activation of the complement system. In addition to innate immunity, adaptive immunity is also associated with atherosclerosis through antigen-presenting cells, T and B lymphocytes. AMI also increases the expression of some ILs and promotes macrophage and lymphocyte accumulation. Reperfusion increases the expression of anti-inflammatory ILs (such as IL-10) and generates oxygen free radicals. Although CAD and AMI are inflammatory disorders, the only drugs with anti-inflammatory effect so far widely used in ischemic heart disease are aspirin and statins. Some immunomodulatory or immunosuppressive promising therapies, such as cyclosporine and colchicine, may have benefits in CAD. Methotrexate also has potential cardioprotective anti-inflammatory effects, through increased adenosine levels. The TETHYS trial (The Effects of mETHotrexate Therapy on ST Segment Elevation MYocardial InfarctionS trial) will evaluate low-dose methotrexate in ST elevation AMI. The CIRT (Cardiovascular Inflammation Reduction Trial), in turn, will evaluate low-dose methotrexate in patients with a high prevalence of subclinical vascular inflammation. The CANTOS (The Canakinumab Antiinflammatory Thrombosis Outcomes Study) will evaluate canakinumab in patients with CAD and persistently elevated CRP. The blockage of other potential targets, such as the IL-6 receptor, CC2 chemokine receptor and CD20, could bring benefits in CAD.

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