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Atherosclerosis and cardiovascular disease in patients with rheumatic disease, with focus on SLE: risk factors and underlying mechanisms

therosclerosis and ensuing cardiovascular disease (CVD) including myocardial infarction (MI) and stroke, represents the major Acause of death. During recent years, it has become clear that atherosclerosis is a chronic inflammatory condition, and further evidence comes from a recent study where interleukin-1 inhibitor decreases the risk of MI in patients at risk, in the Cantos study. Interestingly, atherosclerosis also may have autoimmune properties. One example of this is an immune reaction to heat shock protein (HSP) 60/65, which may play a role in the inflammation which is typical of atherosclerosis. Atherosclerosis per se is usually not enough for the development of CVD, usually rupture of the atherosclerotic plaques is needed, and here inflammation plays an important role as well as an active immune response, with activated T cells in the lesion areas. The risk of atherosclerosis, especially prevalence of atherosclerotic plaques and also vulnerable plaques, recently demonstrated by our research group is increased in systemic lupus erythematosus (SLE). In line with this, the risk of CVD is very high in SLE. An increased risk of CVD and atherosclerosis has also been reported in several other rheumatic and autoimmune conditions, even though it seems that in SLE, the association is especially strong. A combination of traditional and non-traditional risk factors for atherosclerosis and CVD is implicated in rheumatic and autoimmune disease in general, and in SLE in particular. Traditional risk factors include hypertension, dyslipidemia, smoking and diabetes. Anti-phospholipid antibodies and systemic inflammation could play a role. We have reported that the so called IgM natural antibodies, here again small lipid moieties, especially phosphorylcholine (anti-PC) and malondialdehyde (anti-MDA) could be important not only to protect against atherosclerosis and CVD, but also against SLE per se, and in other rheumatic conditions. Both anti-PC and anti-MDA have anti-inflammatory properties, decrease the uptake of oxidized LDL in atherosclerotic lesions, where OxLDL is believed to be a major factor, and increase clearance of apoptotic cells, which could be especially important in SLE. In addition to being an important clinical problem, CVD and atherosclerosis in autoimmune diseases like SLE could shed light on fundamental autoimmune mechanisms in human disease.

Biography

Johan Frostegård is a Professor of Medicine since 2003 and Senior Consultant in Internal Medicine and in Rheumatology at Karolinska Institutet. His research is focused on Autoimmunity and Atherosclerosis, where his research group has for the first time identified a novel protection marker, natural antibodies against phosphorylcholine (anti-PC) and also mechanisms which could provide a cause as to how anti-PC could protect against both autoimmunity and atherosclerosis. He led a European Union Research Consortium, CVDIMMUNE, where some of the concepts presented were developed.

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