

Atherosclerosis Risk Factors

Rounding Up the (Un)usual Suspects

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Although controlling hypertension, lowering serum cholesterol, and eliminating tobacco have had a measurable impact on the incidence of cardiovascular disease, the fact remains that conventional risk factors predict fewer than half of future cardiac events. It has become increasingly evident in the past few years that the multifactorial genesis of atherosclerosis is much more complicated than once thought. The search for additional risk factors has turned up some surprising candidates that could substantially alter how we prevent and treat cardiovascular disease. Here are some of the more plausible risk factor candidates.

Miscellaneous Candidates of Inflammation

Homocysteine

Homocysteine was identified as a possible risk factor for atherosclerosis some 40 years ago. Homocysteine is an intermediate product of metabolism of methionine, an essential amino acid derived from dietary protein. The normal fasting plasma level of homocysteine is <7 . A direct causative link between elevated homocysteine and occlusive vascular disease has been established. Laboratory investigations have suggested several possible mechanisms. These include enhanced platelet activation, enhanced collagen production with accumulation in vascular smooth muscle cells, and endothelial cell damage. In humans, hyperhomocystinemia has been shown to be associated with endothelial dysfunction that is believed to be an early phase in the pathogenesis of atherosclerosis. In the Physicians' Health Study, male docs with baseline homocysteine levels 12% above the upper limit of normal had three times the risk of a myocardial infarction (MI) than those with normal homocysteine levels, independent of other risk factors.

Several recent trials have demonstrated that significant reductions in the plasma homocysteine level can be achieved by dietary supplements of folic acid and vitamins B6 and B12.

C-Reactive Protein

In the Physicians' Health Study, men in the highest quartile serum level of C-reactive protein (CRP), a marker of inflammation, had three times the risk for MI and two times the risk for Ischemic stroke as men in the lowest quartile.

Fibrinogen

At least six prospective epidemiological studies have suggested a link between raised fibrinogen levels and increased risk of acute MI and stroke; elevated levels of fibrinogen may increase plasma viscosity, promote platelet aggregation, and stimulate smooth muscle proliferation.

Lipoprotein (a)

This family of lipoprotein particles have been linked to premature cardiovascular disease. There are two patterns of low-density lipoprotein (LDL): pattern A, containing a high proportion of light buoyant lipoprotein particles, and pattern B, containing small dense LDL particles associated with increased triglycerides and low levels of high-density lipoprotein cholesterol, the co-called “good” cholesterol. Data from the Stanford Five-City Project suggests LDL particle size is an inverse risk factor (i.e., the smaller the particle, the larger the risk) for CAD, independent of other risk factors.

Other Independent Risk Factors

HDL 2b

Overall, HDL is good cholesterol, but 2b is the most beneficial. There is a direct correlation between the quantity of this subclass of HDL particles and a myocardial infarction (MI).

“It’s a national scandal,” says Thomas Yannios, M.D., associate director of critical care and nutritional support at Ellis Hospital in Schenectady, New York. “I’d estimate that only 5% of doctors in the US are using these specialized blood tests. There’s an incredible lack of understanding of this science on the part of the medical profession. It’s exasperating to me, because we now have the ability to look into a person’s metabolic soul.”

Atherotech, a laboratory in Birmingham, Alabama, claims it can raise a physician’s ability to predict cardiovascular disease from 40% to 90%.

Axxess Medical Solutions, evaluates, tests and interprets these risk factors for cardiovascular disease in our patients!

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