Immunopathogenesis of Atherosclerosis

To the Editor:

We read with great interest the article on acceleration of atherosclerosis by nonspecific stimulation of the immune system. Lehr and colleagues showed data supporting the concept that atherosclerosis has an immunopathological component, making improbable that a single infectious agent should assume particular importance in its initiation or progression.

We tested this hypothesis in 218 patients (119 men; 99 women; mean age 64.6; 29 to 83 years) referred for coronary angiography. We studied the possible association between seropositivity for a particular microbial agent and angiographically proven coronary artery disease (CAD), defined as more than 50% diameter stenosis of at least one coronary artery. Blood was tested for seromarkers of 6 pathogens (Hepatitis-A virus, Chlamydia pneumoniae, Helicobacter pylori, Herpes simplex virus, and Influenza virus type A and type B). Analysis of seromarkers, of all 6 microbial agents demonstrated that seropositivity for 1 single pathogen was no predictor of risk for CAD. In contrast, the number of infectious pathogens to which an individual has been exposed (“infectious burden”) correlated well with CAD. Five or six seromarkers were positive in 21.3% of patients with CAD and in 9% of patients without CAD (P=0.03).

Although attractive, the microbial pathogenesis theory for atherosclerosis remains unproven. Over the last century, microbiologists have invoked fulfillment of Koch’s postulates to determine pathogen causality. Certainly a multifactorial disease process such as atherosclerosis unlikely will be due to a single microbial agent.

Our clinical data confirm the results from Lehr and colleagues as well as observations from others that multiple infectious agents contribute to atherosclerosis. We hypothesize that the risk of cardiovascular disease posed by infection is related to the number of pathogens to which an individual has been exposed (the “pathogen burden”). In contrast, seropositivity for a single pathogen is unlikely to represent a predictor of risk for CAD.

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