Promoting regulatory T cell production may help control atherosclerosis

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In atherosclerosis, the buildup of cholesterol deposits in arteries poses a major risk for cardiovascular diseases like heart attack and stroke. As cholesterol accumulates, it triggers an inflammatory response that recruits several types of immune cells, including T cells, leading to the formation of atherosclerotic lesions. Although pro-inflammatory T cells are associated with the worsening of lesions, regulatory T cells play a protective role against disease development.

This month in the *JCI*, work led by Catherine Hedrick at the La Jolla Institute for Allergy and Immunology uncovered a pathway that controls the balance between pro-inflammatory and regulatory T cells and may influence the progression of atherosclerosis. They focused on the role of the ATP-binding cassette transporter G1 (ABGC1), which is known to increase cholesterol accumulation in arteries.

Because this transporter is also present at high levels on immune cells, Hedrick and colleagues hypothesized that it may also influence the proliferation T cells. In mice, removing ABCG1 from T cells increased the number of regulatory T cells and decreased the number of pro-inflammatory T cells in the bloodstream. Atherosclerosis-prone mice also developed fewer lesions when ABCG1 was removed from T cells.

These findings suggest that therapies targeting ABCG1 could potentially increase the production of regulatory T cells and protect against the progression of atherosclerosis.

More information: Hsin-Yuan Cheng et al, Loss of ABCG1 influences regulatory T cell differentiation and atherosclerosis, *Journal of Clinical Investigation* (2016). DOI: 10.1172/JCI83136