Researchers uncover link to increased atherosclerosis risk in lupus patients

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Researchers in China have demonstrated interferon-alpha (IFN-a) is associated with increased risk of atherosclerosis in patients with systemic lupus erythematosus (SLE). For the first time, IFN-a priming was shown to promote lipid uptake and foam cell formation—a crucial step in plaque build-up. This activation of the IFN signaling pathway may be linked to the premature atherosclerosis risk in SLE. Full findings of this novel study are available in the February issue of *Arthritis & Rheumatism*, a journal published by Wiley-Blackwell on behalf of the American College of Rheumatology.

SLE or lupus is a chronic, multisystem autoimmune disease that causes wide-spread inflammation in the body and can affect multiple organs. The Lupus Foundation of American estimates that up to 1.5 million Americans and more than 5 million people worldwide have some form of lupus (systemic, discoid, or drug-induced), which occurs more frequently in women. While prior studies have established that SLE patients demonstrated an increased incidence of premature atherosclerosis, they do not explain what may cause the greater cardiovascular risk.

"Although traditional risk factors such as hypertension, high cholesterol, and diabetes mellitus are thought to be important in mediating an increased risk for atherosclerosis in SLE, they fail to adequately explain the higher incidence of atherosclerotic diseases in SLE patients," said Nan Shen, M.D., Director of the Shanghai Institute of Rheumatology at Ren Ji Hospital and lead author of the study. To further investigate the

cause of premature atherosclerosis in SLE, researchers recruited 42 patients with lupus and 42 healthy volunteers for their study. Blood samples were taken from all participants and peripheral blood monocytes were isolated and analyzed. Peripheral blood mononuclear cells (PBMCs) play an important role in the immune system's ability to fight infection.

Research data suggested that IFN-a priming promoted the formation of macrophage-derived foam cells in SLE patients. Specifically, researchers found macrophage scavenger receptor A (SR-A) expression by IFN-a was associated with enhanced lipid uptake and an increased number of foam cells. The initiating force for the occurrence of atherosclerosis is the accumulation of cholesterol-laden foam cells in the arterial wall. The team also established that expression of SR-A was significantly elevated in PBMCs of lupus patients and was positively correlated with IFN signaling activity.

Dr. Shen concluded, "Our findings further understanding of the mechanisms involved in the development of atherosclerosis in autoimmune disease and may provide potential therapeutic targets for the prevention and treatment of premature cardiovascular disease in lupus patients."

More information: "Interferon-a priming promotes lipid uptake and macrophage-derived foam cell formation: A novel link between interferon-a and atherosclerosis in lupus." Jia Li, Qiong Fu, Huijuan Cui, Bo Qu, Wen Pan, Nan Shen, Chunde Bao. *Arthritis & Rheumatism*; Published Online: November 29, 2010 (DOI:10.1002/art.30165); Print Issue Date: February 2011.

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