Rheumatoid Arthritis and Vascular Failure - Rheumatoid Arthritis Is a Risk Factor for Cardiovascular Disease-

Jun-ichi Oyama¹ and Koichi Node²

Key words: rheumatoid arthritis, endothelial function, inflammation

(Intern Med 58: 1373-1374, 2019)
(DOI: 10.2169/internalmedicine.2182-18)

Rheumatoid arthritis (RA) is the most common chronic systemic autoimmune disease and is characterized by persistent synovitis, systemic inflammation and autoantibody. The risk of cardiovascular diseases (CVD) has been reported to be increased in autoimmune disease, especially in RA. There is growing evidence that RA contributes to the promotion of atherogenesis secondary to endothelial dysfunction. Indeed, half of all deaths among RA patients are considered to be due to CVD. Furthermore, the CVD risk and cardiovascular mortality in RA patients are about 1.5- to 2.0-fold that in the general population (1). Endothelial dysfunction is thought to reflect the early phase of atherosclerosis. The endothelial function decreased in RA patients to an extent similar to that in patients with type 2 diabetes mellitus (T2DM), and RA is almost equivalent to T2DM as a cardiovascular risk factor (2-4). Therefore, although diabetes is a well-known cardiovascular risk factor, it is necessary to pay close attention to the onset of cardiovascular events in RA patients.

Endothelial function tests have changed over time, and the forearm blood flow response to acetylcholine infusion by strain-gauge plethysmography or flow-mediated dilatation (FMD) after transient ischemia of upper arm has been conventionally used. However, the use of peripheral arterial tonometry for reactive hyperemia (RH-PAT) has become common recently. Many manuscripts have conventionally reported that the endothelial function using FMD is impaired in patients with RA. Mori et al. observed a reduced endothelial function in patients with RA, which is similar to the findings in patients with T2DM (5). The report by Mori et al. is the first to describe that the endothelial dysfunction was recognized using RH-PAT.

Patients with RA usually receive anti-rheumatic drugs, but do these drugs affect the endothelial function? Glucocorticoids were initially used for RA and are still used often today (6, 7). Some articles have reported that methotrexate improves the endothelial function (8, 9), but others have described opposite results (10), and one report suggests that methotrexate may cause endothelial dysfunction through hyperhomocysteinemia, direct injury to the endothelium or by increasing the oxidative stress. Anti-TNF-α therapy is now widely applied and can improve the endothelial function (8, 11, 12). Taken together, these findings suggest that anti-inflammatory treatments may improve the endothelial function in patients with RA by decreasing the inflammatory responses and endothelial activities.

Whether or not therapeutic interventions can reduce the cardiovascular risk is unclear at present, but as with traditional risk factors, efforts to reduce cardiovascular events with adequate therapeutic intervention are required.

Author’s disclosure of potential Conflicts of Interest (COI).
Jun-ichi Oyama: Others, Fukuda Denshi. Koichi Node: Honorarily, Boehringer Ingelheim, Daiichi Sankyo, Astellas, MSD, Takeda, Mitsubishi Tanabe and Sanofi; Research funding, Sanwa Kagaku Kenkyusho, Astellas, Takeda, Boehringer Ingelheim, Bayer, Teijin and Mitsubishi Tanabe.

References

¹Department of Circulation Regulation, Saga University, Japan and ²Department of Cardiovascular Medicine, Saga University, Japan

Received for publication September 25, 2018; Accepted for publication October 2, 2018
Correspondence to Dr. Jun-ichi Oyama, junoyama@cc.saga-u.ac.jp

The Internal Medicine is an Open Access journal distributed under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. To view the details of this license, please visit (https://creativecommons.org/licenses/by-nc-nd/4.0/).