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Cardiology 2019: Rheumatoid arthritis and cardiovascular events

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Rheumatoid arthritis (RA) is a chronic systemic inflammatory disease affecting -1% of the general adult population. Systemic inflammation associated with risk factors as disease activity and seropositivity could contribute to accelerated atherosclerosis. The latter correlates with a risk of morbidity and mortality due to cardiovascular diseases (CVD). The aim of the study to detect cardiovascular events (CV) and estimate intima-media thickness (IMT) and plaque formation in rheumatoid arthritis patients with relation to age, Rheumatoid arthritis activity, seropositivity, cardiovascular risk factors. The immune underpinnings of heart disease and rheumatoid arthritis share many similarities. In addition, circulating acute phase reactants, such as C-reactive protein (CRP), are substantially elevated in rheumatoid arthritis and are risk markers for heart disease in the general population. Understanding the factors responsible for heart disease in patients with rheumatoid arthritis, such as abnormal immunity and chronic inflammation, may lead to novel therapeutic targets in the prevention of heart disease.

A case-control prospective study was conducted with one hundred twelve rheumatoid arthritis patients, female 80.4%, aged from 21 to 84 years. Twenty-one of them had their first cardiovascular event after rheumatoid arthritis was diagnosed, and they were considered as a case group. The case and control groups were matched in gender and disease duration. The Das28 score measured disease activity; health status was evaluated by the Health Assessment Questionnaire (HAQ). Brachiocephalic artery hemodynamic parameters, IMT and plaques were assessed using high-resolution B mode and Doppler–mode ultrasound. AP value of less than 0.05 was used as the threshold for statistical significance. Statistical analysis was performed by using IBM SPSS 21.0.

Patients with cardiovascular events were mostly females (81 %) with a mean age of 68.78 (±8.97) years. Fifteen of RA patients developed stroke, while twelve myocardial infarctions. The median RA disease duration was nine years (IQR 5.6-15), (p= 0.431). cardiovascular patients were significantly older compared to control RA patients 56.14(±14.73), (p<0.001). Only 4,8 % of cases were smokers (p=0.002). Amongst all case group patients, 90.5% were suffering from arterial hypertension (p=0.002), but 4.8% had such comorbidity as diabetes mellitus (p=0.942). Disease activity evaluated by the Das 28 (CRP) score for the case group was 5.19 (IQR 2.83-5.99); (p=0.280) but assessed by the HAQ-1.75 (IQR 1.0-1.75); (p= 0.140). Seropositivity was found in 85.7% case-patients with CV events (p=0.724). Atherosclerotic plaques in brachiocephalic vessels were found in 66.7% of cases vs control 53.8%, (p=0.336). Atherosclerotic plaques in brachiocephalic, causing >50 % lumen obstruction had 23.8 % of patients with cardiovascular events, (p=0.003).

In our case-control study, non-fatal stroke and MI was observed in older individuals (females) being positively associated with systolic arterial hypertension and brachiocephalic atherosclerotic plaques, protruding lumen more than 50%. Seropositivity and disease activity were not good predictors to cardiovascular events. Heart disease remains a major problem for patients with rheumatoid arthritis. Systemic inflammation plays a major role, through direct and indirect effects on the vasculature. More research is needed to delineate the disease mechanisms, and to develop and evaluate risk assessment tools, biomarkers, prevention strategies and treatments that are specific to rheumatoid arthritis. The cardiovascular risk in patients with rheumatoid arthritis is not well recognized by practicing physicians, and better recognition and control of traditional risk factors in patients with rheumatoid arthritis is important. Coordination of care among rheumatologists, cardiologists, and primary care physicians will be needed for optimal management of cardiovascular risk in patients with rheumatoid arthritis. Tight control of systemic inflammation among patients with rheumatoid arthritis may also reduce cardiovascular risk. Symptoms suggestive of CAD in patients with rheumatoid arthritis should be evaluated promptly, and early referral to a cardiovascular specialist for appropriate evaluation and treatment provides the best chance of optimizing outcomes. The key elements in the prevention of coronary artery disease in patients with rheumatoid arthritis are aggressive management of traditional risk factors and optimization of anti-inflammatory and immunomodulatory therapy to achieve effective disease control.

Disentangling the relationship between inflammation, immune modulating treatment and cardiovascular risk in rheumatoid arthritis is difficult. Specific disease modifying drugs (e.g., methotrexate and TNF-inhibitors) effectively control inflammation in rheumatoid arthritis and reduce cardiovascular risk. In contrast, glucocorticoids increase cardiovascular risk because of their adverse metabolic effects, which apparently outweigh their anti-inflammatory benefits. Common treatments to reduce cardiovascular risk (e.g., statins) are likely to be effective in patients with rheumatoid arthritis, but this supposition has little empirical support. Currently enrolling trials such as one administering methotrexate (a first-line treatment for rheumatoid arthritis) to post-MI patients without rheumatoid arthritis, should provide insight regarding whether reducing inflammation alone is associated with reduced cardiovascular risk.

Finally, similar pathways in rheumatoid arthritis and heart disease might be considered as therapeutic targets, such as T-cell-directed or anti-cytokine therapies (IL-1, IL-6, etc.). Indeed, an anti-IL-1β monoclonal antibody (canakinumab) is being studied for heart disease treatment. These studies are anticipated to provide valuable new insights into the pathophysiology and treatment of heart disease.

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