Carotid Ultrasound in Rheumatoid Arthritis Patients

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Introduction. Carotid ultrasound based on assessment of intima media thickness (IMT) and presence of plaques has been considered a cheap and efficient way to measure clinical atherosclerosis. Both carotid IMT and carotid plaques have proven to be good predictors of CV events of rheumatic patients, offering additional value to traditional risk scores in the prediction of CVD.

Aim, Materials and Methods. The aim of the study is to verify whether atherosclerotic brachiocephalic plaques, traditional CV risk factors, as well as RA (rheumatoid arthritis) disease activity influence risk of myocardial infarction in RA patients with comparable disease duration.

A case control study was performed within the retrospective cohort of 92 RA patients, female 81 %, aged 40–84. Cases were 20 patients who developed their first myocardial infarction (MI) after diagnosis of RA. The case and control groups were matched by sex and disease duration, erosions and synovitis of small joints, seropositivity and smoking history (years), BMI (body mass index) and AIP (atherogenic index of plasma). RA activity and severity were determined by DAS28 scores and HAQ questionnaires, ultrasonography of synovitis. Information about traditional (BMI, smoking history, *diabetes mellitus*, primary arterial hypertension) and disease-specific risk factors was obtained. AIP (atherogenic index of plasma (log10 TG/HDLC) was calculated. Brachiocephalic artery hemodynamic parameters, IMT and plaques were assessed using high resolution B mode and Doppler-mode ultrasound.

Results. Patients with CVD were mostly females (85 %), mean age 67.24 (± 9.59), in the control group we had 77.8 % females; mean age – 60.84 (± 10.45), p = 0.027. Overall, the mean age of the case group was 66.6 (± 9.26), but in the control group – 60 (± 10.79) years. Patients with MI were significantly older compared to control RA patients. Disease duration did not differ between the case and the control groups, respectively 3.5 (0.6–10.8) *vs.* 2 (1–6) years (p > 0.05), as well as seropositivity (p = 0.284). Seropositivity was found in 95 % of the cases, but in 83 % of control group. Despite that, RF (rheumatoid factor) was more pronounced in the case group median 117.7 (40.5–238.6) *vs.* control 47.3 (14.1–143.5). Interestingly, 60 % of RA cases with MI and 44 % of the control group RA patients had erosions in small joints (p = 0.218).

High RA disease activity (DAS28 above 4.17) was observed in 70 % of the patients with MI (p = 0.07), no statistically significant difference in disease activity (HAQ scores, DAS28) were observed between MI cases and controls (p > 0.05). Stroke developed in 15 % of the cases and 9.7 % of controls (p = 0.449). Primar arterial hypertension was detected in 95 % of the patients with CVD and 61.1 % of the control group (p = 0.004). About 50 % of the cases were smokers; among the control group the proportion of smokers was 39.8 % (p = 0.372). Furthermore, atherosclerotic lesions were not more pronounced in RA patients with *vs.* without CVD. Atherosclerotic plaques in brachiocephalic vessels resulting in < 50 % luminal stenosis were found in 50 % of the cases; 65.3 % in the control group (p = 0.213), but 30 % of CVD patients had plaques causing < 50 % lumen, and 10.6 % in the control group (p = 0.137). Smokers with arterial atherosclerotic plaques < 50 % had the increased risk of CV events, relative risk 4.4 CI 95 % (1.23–15.7); OR 9.5 (1.09–82.73).

Conclusions. In our case-control study, MI was observed in older individuals RF positive, being positively associated with systolic arterial hypertension. Increased relative risk was found in smokers with arterial atherosclerotic plaques protruding lumen more than 50 % in brachiocephalic vessels.