



Artery Research

ISSN (Online): 1876-4401

ISSN (Print): 1872-9312

Journal Home Page: <https://www.atlantis-press.com/journals/artres>

P11.24: RHEUMATOID ARTHRITIS AND CARDIOVASCULAR EVENTS

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To cite this article: S. Stropuviene, S. Aidietiene, A. Cypiene, R. Ruginene, A. Laucevicius (2011) P11.24: RHEUMATOID ARTHRITIS AND CARDIOVASCULAR EVENTS, Artery Research 5:4, 198–199, DOI: <https://doi.org/10.1016/j.artres.2011.10.180>

To link to this article: <https://doi.org/10.1016/j.artres.2011.10.180>

Published online: 14 December 2019

evaluate arterial wall parameters – IMT, distensibility and stiffness of CCA and cardiovascular risk factors (systolic and diastolic blood pressure (BP), body mass index (BMI) and smoking) – in hypertensive adolescents (HA) and normotensive adolescents (NA).

Methods: Arterial wall structural and functional parameters were measured using echo-tracking method (Art. Lab system). BP was measured using BP monitor (Schiller ARGUS VCM). Twenty nine HA (17-18 yr. old, systolic BP ≥ 140 mmHg, diastolic BP ≥ 90 mmHg) and fifty five NA were included. Height, weight, BMI, and smoking distribution were obtained from each group. All analysis was performed using the Statistical Analysis System, SAS (version 8.1).

Results: Hypertensive adolescents had significantly greater values of IMT ($494 \pm 84.69 \mu\text{m}$ vs. $465 \pm 65.2 \mu\text{m}$), distensibility ($767 \pm 121.94 \mu\text{m}$ vs. 692 ± 149.01) and carotid stiffness (2.28 ± 0.8 vs. 1.86 ± 0.76) ($p < 0.05$) compared with normotensive adolescents. They also had significantly higher weight, height, BMI and systolic blood pressure ($p < 0.05$). No significant differences were found between smokers and non-smokers.

Conclusions: Disturbance of arterial wall parameters can be found in adolescents. Hypertensive adolescents had significantly greater values of IMT, distensibility and stiffness of common carotid artery than normotensive adolescents. Short period of smoking had no significant impact on CCA parameters.

P11.21

PARAMETERS OF LOCAL AND SYSTEMIC ARTERIAL STIFFNESS IN PATIENTS WITH ARTERIAL HYPERTENSION AND MODERATELY MARKED CAROTID ATHEROSCLEROSIS WITH AND WITHOUT DIABETES

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Aim: To evaluate parameters of local and systemic arterial stiffness in patients with arterial hypertension (AH) and moderately marked carotid atherosclerosis (CA) with/without diabetes.

Materials and methods: Seventy-one patients (53 female) with AH (Grade 1-2) and CA (stenosis 20-55%) were enrolled in the study. Patients with diabetes were included in Group 1 ($n=29$), and patients without diabetes - in Group 2 ($n=42$). Mean age in two groups was 67.4 ± 6.5 vs. 66.4 ± 6.9 ($p=0.9$); stenosis intensity - $38.3 \pm 9.3\%$ vs. $33.9 \pm 8.0\%$ ($p=0.03$). Both groups were comparable in sex ratio, incidence of cardiovascular risk factors, duration of AH and diabetes. Local stiffness of carotid arteries was evaluated by means of eTRACKING technology (ALOKA $\alpha 7$). Arterial stiffness parameter "β-index", elastic modulus (Ep), arterial compliance (AC) and local pulse wave velocity (PWV_{local}) were measured. Systemic arterial stiffness (pulse wave velocity, PWV) was evaluated using applanation tonometry (SphygmoCor).

Results: eTRACKING results for distal segment of the left common carotid artery (CCA) in Groups 1 and 2 were respectively: β-index 11.3 ± 4.5 vs. 9.5 ± 2.7 ($p=0.04$); 175.2 ± 71.3 vs. 137.9 ± 40.8 ($p=0.0007$). Local stiffness parameters for the distal segment of the right CCA in groups were respectively: β-index 10.3 ± 3.8 vs. 8.8 ± 2.9 ($p=0.1$); Ep 158.6 ± 61 vs. 135.3 ± 39.9 ($p=0.09$). There were no significant differences of AC and PWV_{local} values between groups ($p > 0.05$). PWV in Group 1 was significantly higher than in Group 2 (15.3 ± 3.0 vs. 13.0 ± 2.8 , $p=0.0005$).

Conclusions: Local and systemic arterial stiffness parameters in patients with AH and moderately marked carotid atherosclerosis were significantly higher in cases of diabetes than in its absence.

P11.22

LONG-TERM PROGNOSIS OF CORONARY ARTERY CHRONIC TOTAL OCCLUSIONS REVASULARIZATION

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Background: The clinical benefit of chronic total occlusions (CTO) recanalization is still being discussed. The aim of our study is to analyse long-term clinical results of CTO recanalisation drug-eluting stent implantation.

Methods: Patients were divided into groups: main group(A) consisted of patients with successful revascularization($n=321$, mean age 58 ± 9 years) compared with patients(control group B), who received medical therapy($n=264$, mean age 61 ± 10 years). The average follow-up was 1095 ± 36 days.

Predictors of survival without coronary events (angina+myocardial infarction+coronary death) and chronic heart failure reoccurrence were analyzed employing Cox proportional hazards model.

Results: The frequency of angina and chronic heart failure reoccurrence was lower in the group with successful revascularization of CTO ($p < 0.05$). According to the functional tests, after a period of 3 years of follow-up, the frequency of positive exercise tolerance tests was higher in group B($p < 0.05$). Patients in group A required less antianginal therapy ($p < 0.05$). Analysis of coronary events predictors in both groups revealed that the main factors negatively affecting the long-term prognosis are: patient's age over 65 years and diabetes mellitus ($p=0.006$). The left anterior descending artery lesion ($p=0.001$) is the main factor that increases the risk of heart failure progression in the long run in group B. 3-year survival without coronary events was higher in group A. Survival without progression of chronic heart failure by the end of the 3d-year of observation period was also higher in group A.

Conclusion: Revascularization of CTO of coronary arteries is effective and feasible. Endovascular recanalization of CTO with drug-eluting stent implantation can improve the long-term prognosis.

P11.23

ARTERIAL STIFFNESS AND INTIMA-MEDIA THICKNESS AS EARLY MARKERS OF VASCULAR ALTERATIONS IN PATIENTS WITH METABOLIC SYNDROME

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Background: Metabolic syndrome (MS) is associated with early abnormalities in arterial wall and an increased risk of cardiovascular diseases. High arterial stiffness and intima-media thickness (IMT) are markers of vascular aging and subclinical organ damage.

Aim: To test the possibilities of carotid-femoral pulse wave velocity (PWV), wave reflections, and IMT of the common carotid artery, to identify early vascular alterations in patients with metabolic syndrome.

Materials and methods: Ninety nine patients (63 with MS, and 33 controls), were examined. Metabolic syndrome was defined according to National Cholesterol Education Program Adult Treatment Panel III criteria. Patients aged from 45 to 59 years and had no cardiovascular diseases. SphygmoCor system was used for measurement of carotid-femoral PWV, central aortic systolic pressure (CAP) and wave reflections. IMT was measured by B mode ultrasound.

Results: Patients with MS had significantly increased PWV (9.71 ± 1.92 m/s vs. 7.75 ± 1.10 m/s, $p < 0.0001$) and IMT (0.65 ± 0.12 mm vs. 0.57 ± 0.08 mm, $p=0.003$). There was no statistically significant difference in Augmentation Index between patients with and without MS ($29.04 \pm 9.68\%$ vs. $27.61 \pm 6.36\%$, $p=0.501$). CAP was significantly elevated in the MS group (123.74 ± 13.39 mmHg vs. 117.09 ± 12.47 mmHg, $p=0.047$). Among the patients with MS, there were no statistically significant differences in PWV, IMT between groups with and without diabetes mellitus.

Conclusions: Patients with metabolic syndrome have increased arterial stiffness and intima media thickness, even in the absence of cardiovascular complications and diabetes mellitus. Early detection of vascular abnormalities may help to improve cardiovascular risk prediction in this group.

P11.24

RHEUMATOID ARTHRITIS AND CARDIOVASCULAR EVENTS

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Objective: Rheumatoid arthritis (RA) is inflammatory autoimmune disease, which is associated with increased cardiovascular mortality. In this study clinical data were analysed to look for a risk factors for the development of cardiovascular events in RA patients.

Materials and methods: The case control study was done between RA patients, who admitted to Rheumatological department and had cardiovascular events history and those, who haven't. Clinical, laboratory tests, arterial stiffness, flow-mediated dilatation measurement were analysed to look for a risk factors for the development of cardiovascular events.

Results: 54 patients, who were diagnosed with RA, formed the case control study by disease duration and age. 18 of them had a history of cardiovascular event (myocardial infarction and cerebral stroke were the most common) and 36 were controls (without the event). 90,7% were women. Mean age was $62,9(7,1)$ years, mean disease duration - $15,5(10,2)$ years. Patients

with history of cardiovascular events had higher: number of swollen and tender joints, disease activity score (DAS28), body mass index (BMI), level of ESR, CRP, total cholesterol, triglyceride, augmentation index, aortic pulse pressure. Cases with cardiovascular event were also more likely to have taken higher doses of corticosteroids compared to controls. In statistical analysis, only triglyceride level and aortic pulse pressure were significant risk factor for the development of cardiovascular events ($p < 0.05$). The other mentioned factors have drawn near but haven't crossed the level of statistical significance.

This research was funded by a grant (No. MIP – 83/2010) from the Research Council of Lithuania.

P11.25

DETERMINANTS OF ARTERIAL STIFFNESS IN YOUNG INDIVIDUALS AT LOW CARDIOVASCULAR RISK: THE ROLE OF AUTONOMIC NERVOUS SYSTEM

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Our aim was to study the influence of autonomic nervous system and other factors on arterial stiffness in young individuals at low cardiovascular risk. The study involved 136 healthy individuals (mean age 23.5 ± 6.7 years, 89 men and 47 women). The examination included: cardiovascular risk factors screening, heart rate variability (HRV), vascular stiffness, and endothelial function evaluation. Stiffness index was measured at baseline (SI_{bl}) and after 500 mcg of sublingual trinitroglycerin (SI_{tng}). Endothelial function was determined as the change of resistance index after inhalation of 400 mcg of salbutamol (EF). Vascular responses were calculated from digital pulse waves (DPW) registered using photoplethysmography. Vascular parameters did not differ between men and women. On multivariate analysis age and diastolic blood pressure were the only determinants of SI_{bl} among the conventional risk factors ($R=0.37$, $R^2=0.14$, $p < 0.001$). Age, systolic blood pressure, and EF were independent predictors of SI_{tng} ($R=0.57$, $R^2=0.33$, $p < 0.001$). Among HRV parameters added to the above models low parasympathetic activity and elevated sympathetic activity evaluated by pNN50 and low frequency waves spectrum (LF), respectively, were independent predictors of higher levels of SI_{bl} ($p < 0.00001$ for each parameter). The model explained nearly 40% of SI_{bl} variability ($R=0.62$, $R^2=0.38$, $p < 0.00001$). Only pNN50 was independently related to SI_{tng} in multivariate model ($p < 0.01$) marginally increasing its predictive value ($R=0.64$, $R^2=0.41$, $p < 0.00001$). Thus, autonomic nervous system significantly affected baseline arterial stiffness evaluated by DPW analysis in young individuals. Whereas SI_{tng} is minimally influenced only by parasympathetic tone and more precisely reflects cardiovascular risk factors effects on arterial wall.

P11.26

CARDIOVASCULAR RISK IN THE VIEW OF INDIVIDUAL RISK FACTORS IN PATIENTS WITH MORE THAN 1 RISK FACTOR PRESENT

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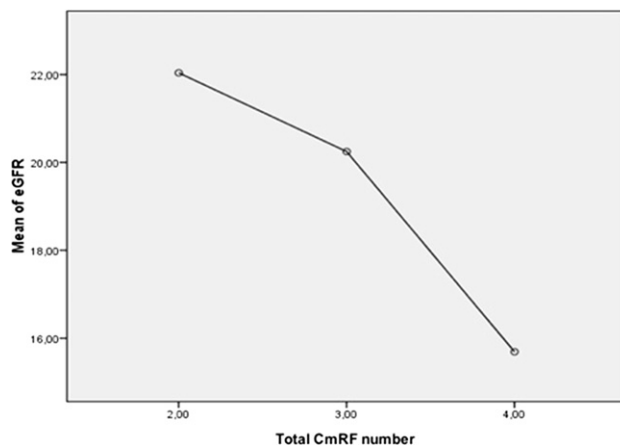
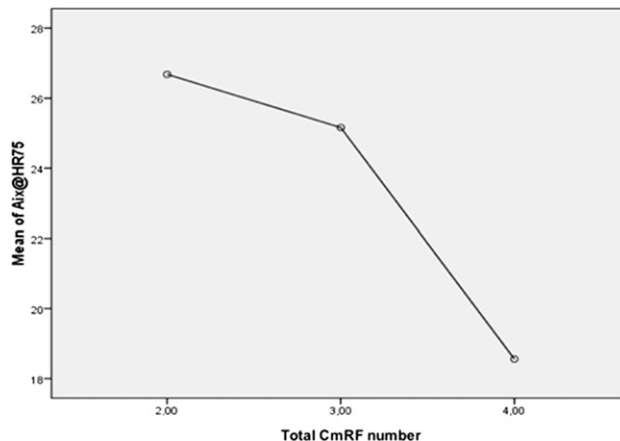
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Context and objective: It is known that patients, with a diagnosis of metabolic syndrome (MetS) having three or more cardiometabolic risk factors (CmRF) are associated with an increased cardiovascular risk. The study aimed at evaluating the increase of the risk depending on a number of individual CmRF while evaluating early subclinical atherosclerosis indicators measuring arterial markers, such as PWV and Aix, as well as eGFR.

Results: A total of 530 patients with at least two CmRF according to the NCEP ATP III metabolic syndrome definition were screened for the assessment of subclinical atherosclerosis (measuring PWVradial, PWVfemoral, Aix@HR75), as well as eGFR (using the MDRD formula). A correlation between Aix@HR75 and eGFR (Pearson Correlation Coef. 0.435, $p < 0.01$) was found. Between the groups with two, three or four CmRF, increasing PWVradial (ANOVA, $p=0.032$) (Figure 1), decreasing Aix@HR75 ($p < 0.01$) and deteriorating eGFR ($p < 0.01$) (Figure 2) with an increasing number of CmRF were noted. The difference in PWVfemoral between the groups was not statistically significant. **Conclusion:** For CVD risk prediction, every individual trait and a number of traits of CmRF must be considered. While Aix increases, eGFR decreases with an increasing number of CmRF. Affected arterial markers were detected in patients with just two CmRF and further worsening was observed with each

additional factor, suggesting that individual CmRF is important when defining the CVD risk for patients with or without MetS.



P11.29

THE COMPARISON OF ENOS MUTATION T786C AND ITS RELATIONSHIP WITH ARTERIAL STIFFNESS

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Acknowledgement Grant ID_2246/2009.

Background: Arterial stiffness represents a strong predictor of the cardiovascular events and mortality, but seems to be influenced by eNOS mutations (responsible for alteration of NO release).

Purpose: to investigate the relationship between T786C mutation and arterial rigidity. **Material and method** 70 patients were investigated (63.4% females), mean age 59.81 ± 11.01 years, without significant differences between genders. Genetic polymorphism of T786C (using PCR method), and arterial rigidity (using a TensioMed™ Arteriograph) were determined.

Results: The distribution according to the presence of genotypes was: 49.3% were negative (TT), 33.8% heterozygous (CT) and 16.9% homozygous (CC). Globally, there was significant difference of the PWVAo values between homozygous and heterozygous or negative patients: 11.65 ± 1.87 m/sec in CC patients vs 9.86 ± 1.56 m/sec in CT patients vs 9.75 ± 1.75 m/sec in TT patients ($p=0.005$). Even though statistical significance was not reached for the rest of the parameters, an ascending trend can still be noticed, CC (in comparison with CT, respectively TT) patients showing higher levels of AixAo ($42.71 \pm 15.24\%$ vs $37.97 \pm 17.24\%$ vs $34.46 \pm 18.11\%$, $p=NS$), Aixb ($15.68 \pm 31.33\%$ vs $1.3 \pm 26.85\%$ vs $-2.07 \pm 31.96\%$, $p=NS$). In the same time, the relationship was also present in women (for PWVAo, CC genotype women