



Artery Research

ISSN (Online): 1876-4401

ISSN (Print): 1872-9312

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

P1.24: DOSE-DEPENDENT INWARD ARTERIAL REMODELLING AND DE STIFFENING AFTER OLMESARTAN IN HYPERSENSITIVES WITH METABOLIC SYNDROME: THE VASCULAR MECHANISM STUDY

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To cite this article: S. Laurent, P. Laeis, H. Rauer, P. Boutouyrie (2013) P1.24: DOSE-DEPENDENT INWARD ARTERIAL REMODELLING AND DE STIFFENING AFTER OLMESARTAN IN HYPERSENSITIVES WITH METABOLIC SYNDROME: THE VASCULAR MECHANISM STUDY, Artery Research 7:3_4, 116–117, DOI: <https://doi.org/10.1016/j.artres.2013.10.054>

To link to this article: <https://doi.org/10.1016/j.artres.2013.10.054>

Published online: 14 December 2019

P1.20
PRESENCE OF INTRACRANIAL STENOSIS IN CORONARY PATIENTS IS ASSOCIATED WITH DETERIORATION OF ENDOTHELIAL FUNCTION

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Objectives: The objectives of this cross-sectional study was to determine the prevalence of extra-/intracranial stenosis in patients with severe coronary artery disease (CAD) and to analyze how endothelial function and arterial stiffness are related to the presence of intracranial stenosis.

Methods: We examined 57 patients with three vessels and/or left stem (LS) CAD. Brachiocephalic arteries were examined with extracranial and transcranial color-coded duplex sonography (ECCS, TCCS) and magnetic resonance angiography (MRA). Endothelial function was assessed as reactive hyperaemia index (RHI) by peripheral arterial tonometry (EndoPAT). Carotid to femoral pulse wave velocity (cfPWV) and augmentation index (Alx@HR75) were assessed by applanation tonometry (Sphygmocor). **Results:** From 57 pts (age 65±9, 44-82; 33% female), 30 pts (53%) were diagnosed with three vessels disease, 27 pts (47%) with LS disease with/without three vessels damage (21 and 6). ECCS revealed carotid plaques and stenoses in 105/114 vessels (92%). TCCS revealed at least one intracranial stenosis in 61.4% pts (35/57). Patients with intracranial stenosis had significantly lower RHI (1.82±0.38 vs. 2.19±0.59, p=0.029) and higher Alx@HR75 (35.72±7.83% vs. 28.06±12.18%). However, there was no significant difference in cfPWV between the patients with and without intracranial stenosis (10.38±2.18 m/s vs 10.43±2.98 m/s, ns).

Conclusions: Patients with severe CAD are at high risk to have a silent intracranial stenosis. In our study group, presence of intracranial stenosis was associated with worse endothelial function but not higher arterial stiffness. Our finding suggests that in patients with generalized atherosclerosis endothelial dysfunction further contributes to the development of intracranial stenosis.

P1.21
CAROTID ATHEROSCLEROSIS EXPRESSED BY INCREASED INTIMA MEDIA THICKNESS IS ASSOCIATED WITH LOW ADHERENCE TO MEDITERRANEAN DIET IN ERECTILE DYSFUNCTION PATIENTS

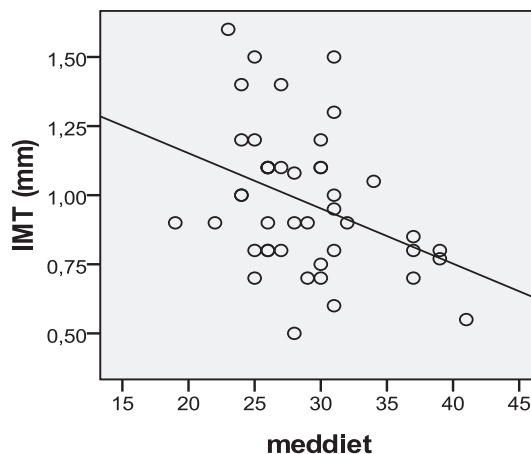
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Objective: The Mediterranean diet, rich in fruits, legumes and vegetables is a healthy dietary pattern, gaining widely recognition as a non-pharmaceutical mean of cardiovascular disease prevention, due to antioxidant and anti-inflammatory properties. Erectile dysfunction (ED), represents an early marker of vascular damage, reflecting endothelial dysfunction and subclinical inflammation. Increased carotid IMT (>0.9mm) relates to traditional risk factors and associates with an unfavorable cardiovascular outcome. Our study aims to investigate the association of Mediterranean diet to carotid atherosclerosis in ED patients.

Methods: 45 ED patients (aged 56±11 years) underwent carotid ultrasound for evaluation of intima media thickness (IMT) in the common carotid artery. Assessment of dietary habits was evaluated through the Med-Diet Score (theoretical range 0–55). Higher values on the score indicate healthier dietary habits.

Results: Med-diet score was significantly associated with age (r=-0.215, P<0.05) systolic and pulse pressure (r=-0.198, r=-0.277 respectively, all P<0.05). Multiple linear regression analysis was applied and revealed that Med Diet Score was inversely associated with IMT (r=-0.43, P<0.001, figure) after adjustment for history and treatment of hypertension, diabetes mellitus, hypercholesterolemia, as well as use of statins and smoking. Patients with a mean IMT >0.9 mm had significantly lower Med-Diet Score as compared to subjects with lower IMT values (27±4 vs 33±5, P<0.05).

Conclusions: The inverse association between Med-Diet Score and carotid IMT, indicates an unhealthy dietary life style in ED patients that contributes to an adverse cardiovascular profile and may help in preventing further vascular damage by adapting healthier dietary habits.



P1.22
REDUCED BAROREFLEX-SENSITIVITY IS NOT RELATED TO INCREASED CAROTID ARTERY STIFFNESS IN PATIENTS WITH SCHIZOPHRENIA

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Objectives: Baroreflex function was found to be impaired in schizophrenia and reduced baroreflex-sensitivity (BRS) was associated with increased mortality. Stiffening of the baroreceptor vessel wall, such as the carotid artery, may lead to reduced activation of the baroreceptors and blunt the baroreflex. We tested the hypothesis that reduced BRS is associated with increased carotid artery stiffness in schizophrenic patients.

Methods: 24 first-episode schizophrenic patients and 24 age- and gender-matched controls were enrolled. Carotid artery was examined by echo wall-tracking and tonometry. Carotid artery distensibility coefficient (DC) and stiffness index β (Stiffness β) were calculated. ECG and beat-to-beat blood pressure recordings were used to determine BRS (BRSsp).

Results: DC was reduced, Stiffness β was increased in patients compared with controls (3.90±0.96* vs. 5.06±0.98 10⁻³/mmHg; 6.15±1.49* vs. 5.01±1.02). BRSsp was reduced in patients compared with controls (9.42±6.88* vs. 22.27±7.50 ms/mmHg). No relation was found between the BRSsp and the carotid elastic parameters in patients, but BRSsp was related to carotid DC in healthy controls (r=0.67*). (mean±SD; *p<0.05)

Conclusions: Carotid artery distensibility is markedly reduced in schizophrenic patients. It has been shown that schizophrenia was associated with increased oxidative stress which may explain stiffening of the elastic vessel wall. The increased carotid artery stiffness does not play a dominant role in the reduction in BRS in schizophrenic patients. It appears that the attenuation of baroreflex may be due to damaged neural elements of the reflex arch.

P1.23 Withdrawn by author

P1.24
DOSE-DEPENDENT INWARD ARTERIAL REMODELLING AND DE STIFFENING AFTER OLMESARTAN IN HYPERTENSIVES WITH METABOLIC SYNDROME: THE VASCULAR MECHANISM STUDY

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Background: Whether angiotensin receptor blockers can dose-dependently remodel the arterial wall during long-term treatment has only been rarely studied. Olmesartan (OM) has previously shown a favourable pharmacodynamic profile for such an action.

Methods: In this phase 3, multi-centre, double-blind, randomized, parallel-group study, 133 subjects with hypertension and metabolic syndrome were assigned to three treatment groups and received either OM 20 mg (n=44),

OM 40 mg (n=42), or OM 80 mg (n=47) once a day according to a force-titration design during a 1 year period. Office blood pressure (BP), 24hABPM, aortic stiffness (carotid-femoral pulse wave velocity-PWV) and carotid parameters (diameter, intima-media thickness, and stiffness) were measured at baseline, 24 weeks (W24) and 52 weeks (W52). A mixed-model was used for statistical analysis.

Results: PWV significantly decreased ($P<0.001$) with time in each group, with no significant time-dose interaction, despite a tendency for a smaller effect of 20 mg, compared to 40 and 80 mg at W52. When the 40 and 80 mg doses were combined (40/80 mg vs 20 mg), there was a tendency ($p=0.0685$) for a time-dose interaction in PWV reduction. After adjustment to changes in MBP, a significant BP-independent reduction in PWV was observed: PWV decreased by -0.61 m/s at W52 ($p=0.0066$) after 40/80 mg, whereas the non-adjusted reduction was -1.33 m/s ($p<0.0001$). Most carotid parameters were improved along with BP reduction, and at W52 significant reductions were observed for carotid PP (-7.15 mmHg) and internal diameter (-0.217 mm), indicating a chronic inward arterial remodeling. Patients receiving the highest dose of OM (40 and 80 mg) were shifted towards both a low elastic modulus and a low wall stress, indicating an improvement in the intrinsic elastic properties of the arterial wall material.

Conclusion: These data suggest that 40 and 80 mg Olmesartan are able to significantly remodel and destiffen the arterial wall during long-term treatment, partly independently of MBP, compared to 20 mg

P1.25

SEVERITY OF ERECTILE DYSFUNCTION PREDICTS FUTURE EVENTS: A SYSTEMATIC REVIEW AND META-ANALYSIS OF PROSPECTIVE STUDIES

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Objectives: Evidence points towards a grading effect of the severity of ED in the predictive ability of this condition for CV events and all-cause mortality. We conducted a meta-analysis of all longitudinal studies for investigating the role of severity of ED in predicting risk of clinical events.

Methods: A comprehensive search of electronic databases was conducted through January 2013. Longitudinal studies that reported relative risk (RR) estimates with 95% confidence intervals (CI) of ED severity were included. Of the 5 studies included (101,147 participants, mean follow-up 6.4 years), all reported results on total CV events and 3 on all-cause mortality (98,212 individuals). Participants were grouped according to their ED severity in 3 different groups.

Results: The pooled relative risks (RRs) for total CV events were 1.32 (95% CI: 1.20 to 1.45, $p<0.001$) for men with moderate ED and 1.92 (95% CI: 1.37 to 2.68, $p<0.001$) for men with severe ED compared with men with no/mild ED ($p=0.036$ for comparison between men with moderate ED vs. severe ED). The pooled RRs for all-cause-mortality were 1.29 (95% CI: 1.01 to 1.65, $p=0.043$) for men with moderate ED and 1.83 (95% CI: 1.26 to 2.66, $p=0.002$) for men with severe ED compared with men with no/mild ED ($p=0.127$ for comparison between men with moderate ED vs. severe ED).

Conclusions: RR for CV events is higher at men with severe ED compared to men with moderate ED, implying a grading effect of ED severity and augmenting the pathophysiological link between ED and CV disease.

P1.26

MICROVASCULAR REACTIVITY PARAMETERS FAIL TO PREDICT CARDIOVASCULAR EVENTS IN PATIENTS WITH CHRONIC KIDNEY DISEASE

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Endothelial dysfunction, as assessed by laser-Doppler flowmetry (LDF) is an accepted method to measure microvascular reactivity, which correlates with

cardiovascular risk factors in several patient populations. The aim of our prospective cohort study was to assess determinants of LDF parameters and to evaluate their prognostic values in patients with chronic kidney disease (CKD).

Ninety four hypertensive, stage 1-5 non-dialysis CKD patients had LDF measurements (iontophoresis of acetylcholine and sodium nitroprusside in different doses and postocclusive reactive hyperaemia (PORH)). Baseline associations of these parameters with clinical, hemodynamic and laboratory characteristics were determined by linear regression models. Patients were followed for a median of 43 (37-55) months and the prognostic value of LDF parameters for cardiovascular (CV) events were evaluated by log-rank tests and Cox proportional hazard models.

The different LDF parameters did show strong correlation with each other. All iontophoresis parameters were strongly and negatively related to the presence of diabetes or antidiabetic treatment. All PORH parameters were strongly and negatively associated to central pulse pressure and the use of calcium channel blockers. During follow-up 26 CV events occurred. In multivariate analysis, only the presence of diabetes was found to be an independent predictor of CV events (RR: 3.85 (1.66-8.89), $p=0.0012$). None of the LDF parameters predicted CV outcome.

According to our results only the presence of diabetes, but not parameters of microvascular reactivity measured by iontophoresis or PORH have prognostic value for CV events in patients with CKD on conservative therapy. (Supported by Hungarian Kidney Foundation and Hungarian Society of Hypertension).

P1.27

ARTERIAL RESISTANCE IS REDUCED IN PATIENTS WITH TYPE 2 DIABETES AND RESISTANT HYPERTENSION AFTER A MEDIAN PERIOD OF 6 MONTHS INTENSIFIED ANTIHYPERTENSIVE TREATMENT

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Objectives: To examine vascular characteristics in patients with type-2-diabetes (T2D) and resistant hypertension (RH) after a median period of 6 months intensified antihypertensive treatment.

Methods: Patients were characterized as having RH based on ambulatory blood pressure measurements (ABPMs, Kivex[®] and Spacelabs[®]). ABPMs were performed at baseline and at 6 months follow up. Pulse wave velocity was measured using the Sphygmocor[®] device. Central arterial pressure waves were obtained using radial applanation tonometry and a generalized transfer function. Central flow waves were measured just below the aortic annulus using echocardiography. Pressure and flow waves were analysed in customized software written in Matlab.

Results: Data are presented as medians and [interquartile ranges]. Follow-up time was 6 [5;8] months. 34 Patients with RH were included for analysis. The intensified antihypertensive treatment resulted in increased use of RAS blockers with no change in use of other antihypertensive agents (diuretics, calcium channel blockers or aldosterone antagonists).

Clinic blood pressure was reduced from 154 [143;164] / 89 [81;94] mmHg to 140 [126;160] / 85 [78;93] mmHg ($P<0.04$), whereas there was no significant reduction in ABPMs (139 [132;145] / 75 [70;79] to 138 [129;148] / 76 [69;82] mmHg).

After statistical adjustment PWV and characteristic impedance did not change. Arterial resistance was significantly decreased even after adjustment including pulse pressure (See table).

Characteristic	Baseline	Follow up
Pulse wave velocity (m/s)	10.8 [8.8;12.2]	9.9 [8.4;13.1]
Characteristic impedance (mmHg/mL)	0.1 [0.07;0.13]	0.08 [0.07;0.12]
Total arterial resistance (mmHg/(mL/s))	1.53 [1.34;1.87]	1.46 [1.19;1.79]*

Table legend: Vascular characteristics in patients with T2D and RH. "*" Statistical significant change from baseline after adjustment for changes in heart rate, mean arterial pressure or pulse pressure if appropriate.

Conclusion: We conclude that arterial resistance, not arterial stiffness, is reduced in patients with T2D and RH after a median period of 6 months antihypertensive treatment.