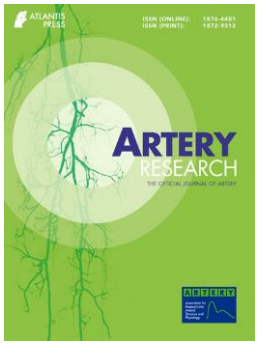

Artery Research

ISSN (Online): 1876-4401 **ISSN (Print): 1872-9312**
Journal Home Page: https://www.atlantis-press.com/journals/artres

P3.03: ARTERIAL STIFFNESS IS ASSOCIATED WITH A HIGHER RISK OF EXTEND PERIVENTRICULAR AND DEEP WHITE MATTER LESIONS ACCORDING TO GENDER IN ELDERLY

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To cite this article: C. Collin, M. Revera, B. Mazoyer, S. Laurent, C. Tzourio, P. Boutouyrie, C. Dufouil (2010) P3.03: ARTERIAL STIFFNESS IS ASSOCIATED WITH A HIGHER RISK OF EXTEND PERIVENTRICULAR AND DEEP WHITE MATTER LESIONS ACCORDING TO GENDER IN ELDERLY, Artery Research 4:4, 159–159, DOI: https://doi.org/10.1016/j.artres.2010.10.046

To link to this article: https://doi.org/10.1016/j.artres.2010.10.046

Published online: 21 December 2019

Korotkoff sounds. The data are shown as Mean+SD, $p<0,05$ was considered significant.
Results: Brachial and central BPs were similar in women at 5-13 weeks of gestation (n=35) and those at 14-21 weeks of gestation (n=20): brachial BP 106,8±9,6/68,3±7,4 and 106±10,9/67,7±7,3 mmHg, respectively, central systolic BP 92,7±8,9 and 91,5±8,7, respectively. AIx adjusted to heart rate (AIx-75) was lower in women at 14-21 weeks of gestation than in those at 5-13 weeks: 4±12% vs 2,5±13% ($p<0,05$). Carotid-femoral PWV was significantly higher in the first trimester of pregnancy than in the second: 8,3±0,1 vs 8,1±0,2 m/s ($p<0,05$).
Conclusion: The results of the study suggest that there is decline in wave reflection and aortic stiffness from 5-13 weeks to 14-21 weeks of gestation in pregnancies complicated with a threatened abortion.

P2.10
THE INFLUENCE OF SMOKING ON ARTERY STIFFNESS IN YOUNG MAN WITH ESSENTIAL ARTERIAL HYPERTENSION

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Objectives: Non-invasive screening tests for identifying the abnormal structure and function of arteries in hypertension are strongly recommended. Useful information may be obtained by measuring arterial stiffness (AS) by pulse wave velocity. The aim of the study was to measure the arterial stiffness among hypertensives and to establish the influence of smoking habit on this parameter.
Methods: The study group consisted of 60 young and middle age man (18-40 years old, mean 27.8) with essential hypertension. The group was divided into smoking and non-smoking subgroups. Arterial stiffness was measured by DVP photoplethysmography using a direct, standardized approach. Stiffness index (SI) derived from digital volume pulse (DVP) was analysis. The anthropometric and blood pressure measurements and concentration of serum lipid profile, fasting glucose and creatinine level and C-reactive protein were performed.
Results: In the whole examined population the mean SI was 7.48 ± 1.68 m/s. There were no statistically significant differences between subgroups - in smoking subjects mean SI was 6.93 ± 1.66 m/s, whereas in non-smoking patients mean SI was 7.65 ± 1.57 m/s. There were correlations between SI and age and systolic blood pressure.
Conclusions: 1. There was no statistically significant difference in stiffness index in smoking and non-smoking young patients with essential hypertension. 2. Noninvasive measurements of arterial stiffness should be considered in young patients without symptoms of subclinical organ damage.

Pathophysiology 1
P3.01
WHY THE RETURN TIME OF THE REFLECTED WAVE CHANGES LITTLE WITH AGE

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Introduction: The return time of the reflected wave as a function of age has been reported to decrease by some but unaltered by others (1). The increased pulse wave velocity (c) suggests earlier return with age, but the effect of reflection (2) and foot-foot velocity ($c_{f\text{-}f}$) of the backward wave are not accounted for.
Method: We consider the aorta to be a uniform tube (phase velocity, c), with at its distal end the impedance of lower body and legs. With age the aortic wall stiffens and c increases. We assume, for simplicity, the distal bed not to change.
Results: With stiffer aorta, $c_{f\text{-}f}$ of the forward wave ($\sim$c) is increased. However, the phase angle of the reflection coefficient becomes more negative, i.e., the apparent aortic length increases. The reflected wave contains few high harmonics, and its foot pertains to low frequencies traveling with a high $c_{f\text{-}f}=c_{app}$ (we found $c_{app}\approx 2.5c$), this high speed contributes little to the return time. Thus, the stiffer aorta increases forward wave speed which shortens the return time, while the phase angle of reflection lengthens the return time (2). The two opposite effects are comparable in magnitude, and therefore the return time is quite independent of age.
Conclusion: With age, the forward wave travels faster (increased $c_{f\text{-}f}$), but the increased phase of the reflection coefficient counteracts this and therefore the return time changes little with age.
1. Baksi AJ, et al., J Am Coll Cardiol. 2009;54:2087-92.
2. Westerhof BE, et al., Hypertension 2008;52:478-83.

P3.02
CAROTID ARTERIAL STIFFNESS ASSESSED WITH E-TRACKING AND ENDOTHELIAL DYSFUNCTION ASSESSED WITH ENDOPAT 2000 ARE RELATED TO ADIPOCYTOKINE LEVELS IN DIABETIC PATIENTS

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Introduction: Plasma levels of adiponectin (APN), are significantly reduced and IL-6 levels are elevated in diabetic patients, but their relations with endothelial dysfunction remains unclear.
Methods: We have observed 40 consecutive patients with type 2 diabetes mellitus (mean age 61 ± 5), with or without nephropathy. We have measured endothelial dysfunction with the Endo-PAT, that is the only FDA approved non-invasive device that reliably endothelial function. We assessed the arterial stiffness by a non-invasive new tool known as ''e-tracking, Aloka, Japan'' We have compared the data of endothelial function with the measurement of 50 healthy volunteers. Patients were divided in two groups: group A with normal endothelial index following international references (EFI>1.7) and group B with reduced endothelial function (EFI <1.7). For each patient a blood sample was collected in tubes containing EDTA as anticoagulant. Samples were centrifuged at +4°C for 15' at 3000g and than stored at -80°C until assayed. Adipocytokines (IL-6 and APN) plasma levels were measured with commercially available ELISA kits following producer's protocol.
Results: IL-6 and APN were negatively (r: -0.51; $p<0.05$) and positively (r:0.54; $p<0.05$) correlated respectively with endothelial index in group B. Arterial stiffness (ß parameter) was negatively correlated (r: -0.30; $p<0.05$) with APN levels in group B. The presence of microvascular complications such as nephropathy was also associated with older age and longer duration of the disease.
Conclusions: patients affect by type 2 diabetes mellitus, endothelial disfunction and carotid arterial stiffness are correlated with plasma levels of IL-6 and APN, independently of presence of nephropathy.

P3.03
ARTERIAL STIFFNESS IS ASSOCIATED WITH A HIGHER RISK OF EXTEND PERIVENTRICULAR AND DEEP WHITE MATTER LESIONS ACCORDING TO GENDER IN ELDERLY

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White matter lesions (WMLs) are detected on brain MRI of elderly and are predictive of cognitive decline. Arterial stiffness is a cause of systolic hypertension and of increase in central pressure and might predict cardiovascular events. This study aimed to examine relationships between arterial stiffness parameters and WMLs in a large noninstitutionalized French cohort.
Methods: In a sample of 931 subjects belonging to 3C-Dijon study, WMLs were detected using automated software from which total, periventricular and deep WMLs volumes were estimated. Central systolic blood pressure (SBP) and aortic stiffness (carotid-to-femoral Pulse Wave Velocity, PWV) were assessed by tonometry. Due to differences in vascular profile, analyses were stratified by gender.
Results: 349 males and 582 females (respectively 75.0±3.7 and 75.4±3.8yrs) were included. Males had higher cardiovascular risk factors: hypertension (69.3 vs. 61.5% for females, $P<0.0005$) and diabetes (11.8 vs. 5.5%, $P<0.001$). Mean Total WMLs were similar between males and females but PWV was higher in males (15.2±3.3 vs. 14.3±3.1 m/s). In multivariable analyses adjusted for age, brain volume, heart rate, hypertension and diabetes, PWV was related to higher periventricular WMLs volume only in males (odds ratio of being in 3rd tertile of WML volume [per 1 SD increase in PWV]: 1.48; 95%CI: 1.10-2.02; $P<0.05$) but not in females. In contrast, in females, a higher central SBP was significantly associated with a greater volume of deep WMLs (OR: 1.27; $P<0.05$) but not in males.
Conclusion: These data suggest that relationships between aortic stiffness, central SBP and WMLs might differ by gender.