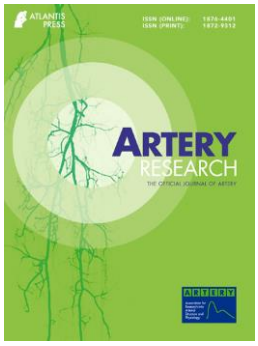

Artery Research

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

P7.10: ARTERIAL STIFFNESS IS A DETERMINANT OF INCREASED LEVELS OF AMINO TERMINAL PRO-B-TYPE NATRIURETIC PEPTIDE – THE ROTTERDAM STUDY

J.H.W. Rutten, F.U.S. Mattace-Raso, G.C. Verwoert, J. Lindemans, A. Hofman, J.C.M. Witteman, A.H. van den Meiracker

To cite this article: J.H.W. Rutten, F.U.S. Mattace-Raso, G.C. Verwoert, J. Lindemans, A. Hofman, J.C.M. Witteman, A.H. van den Meiracker (2009) P7.10: ARTERIAL STIFFNESS IS A DETERMINANT OF INCREASED LEVELS OF AMINO TERMINAL PRO-B-TYPE NATRIURETIC PEPTIDE – THE ROTTERDAM STUDY, Artery Research 3:4, 185–185, DOI: https://doi.org/10.1016/j.artres.2009.10.103

To link to this article: https://doi.org/10.1016/j.artres.2009.10.103

Published online: 14 December 2019

P7.07
IMPACT OF HYPERLEPTINEMIA ON ARTERIAL STIFFNESS IN A COMMUNITY POPULATION SAMPLE

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Purpose: Leptin plays a regulatory role in body weight by controlling appetite and energy consumption. Elevated plasma leptin levels (hyperleptinemia) have been suggested to contribute to pathogenesis of diabetes, hypertension, atherosclerosis and coronary heart disease. Arterial stiffness is an independent predictor of cardiovascular risk. We investigated the differential effects of adiponectin, leptin and resistin levels on wave reflections, an index of arterial stiffness in a community population sample.
Methods: The study population consisted of 97 subjects (mean age: 46.4 ± 10.5 yrs, 57 M/40F), 28 subjects were hypertensives, 22 subjects had dyslipidemia, 4 suffered from diabetes and 32 individuals were obese. Subjects were free of overt cardiovascular disease. Wave reflections were evaluatedwith augmentation index (AIx) of the aortic pressure waveform using commercially available system. Leptin, adiponectin and resistin levels were measured by ELISA kit.
Results: Leptin was associated with AIx ($r = 0.409$, $P < 0.001$) and Tr (an index of pulse wave velocity, $r = -0.385$, $P < 0.001$). Levels of resistin and adiponectin were not correlated with AIx and Tr. After adjustment for confounding factors (age, brachial systolic pressure, fasting glucose, total cholesterol, weight, height, heart rate and hsCRP) leptin levels were independently associated with AIx ($R^2 = 0.605$, coefficient $st = 0.268$ $p = 0.001$).
Conclusion: In contrast to other adipocytokines, leptin levels were associated with arterial stiffness, independently of other confounding factors. Given the prognostic role of arterial stiffness for cardiovascular events, these findings are important to further characterize the increase of cardiovascular risk in subjects with elevated levels of leptin.

P7.08
BIOCHEMICAL LIVER FUNCTION TESTS, ADIPOSE-TISSUE HORMONES AND CARDIOVASCULAR DISEASE TRADITIONAL AND NOVEL RISK PREDICTORS: INTIMATE RELATIONSHIPS

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Purpose: Adipocytokines secreted by adipose tissue play an important role in the pathogenesis of atherosclerosis. Arterial stiffness represents an important novel risk factor of cardiovascular disease. We investigated the association between elevated serum alanine aminotransferase (ALT) levels, adipocytokines, arterial stiffness and the 10-year risk of coronary heart disease (CHD) in a community population sample.
Methods: The study population consisted of 105 subjects (mean age: 46.6 ± 10.6 yrs, 63 M/42F). Aortic stiffness was evaluated with carotid-femoral pulse wave velocity (PWV), and the 10-year risk of CHD was estimated using the Framingham risk score (FRS).
Results: PWV was significantly increased in subjects with elevated levels of ALT compared to those with normal values of ALT (8.44 ± 1.59 vs 6.9 ± 1.5 m/s, $p < 0.05$), whereas there was no relationship between aspartate aminotransferase (AST), γ-glutamyl transferase (γ-GT) and PWV. After adjustment for confounding factors, such as age, mean blood pressure, fasting glucose and body mass index, ALT levels were independently associated with PWV (adjusted $R2 = 0.547$, $p < 0.05$). Levels of leptin ($r = 0.334$, $p < 0.001$), resistin ($r = -0.197$, $p < 0.05$) and adiponectin ($r = -0.244$, $p < 0.05$) were also correlated with PWV, but multivariable regression analysis showed that only leptin (adjusted $R^2 = 0.522$, $p < 0.05$) was an independent determinant of PWV. FRS was correlated with serum ALT ($r = 0.262$, $p = 0.011$) and γ-GT ($r = 0.350$, $p = 0.002$). There was no association between FRS and adipose-tissue hormones.
Conclusion: Elevated serum ALT and leptin levels are associated with traditional cardiovascular risk estimates and novel predictors of risk such as arterial stiffness in the community population supporting the association between abnormal liver function and cardiovascular risk.

P7.09
CORRELATION BETWEEN THE CENTRAL AND BRACHIAL BLOOD PRESSURE AND ASYMPTOMATIC CAROTID ATHEROSCLEROSIS

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Last year we presented that PWVao is a significant marker of early atherosclerosis. Now we were interested about how could the comparison of the central and brachial blood pressure predict the early atherosclerosis. The aim of this study was to analyze the relation between the central and brachial blood pressure and the asymptomatic, subclinical carotis atherosclerosis, and to determine the sensitivity and the specificity of the two BP measurements.
Method: 499 asymptomatic subjects were included in this study. Central and brachial blood pressure were measured simultaneously with oscillometric method (Arteriograph) and carotid scan was performed with carotid ultrasonography in both side by a ''blinded'' investigator.
Results: Cases when higher central BP was measured than on the brachial, were regarded as abnormal. According to this classification χ^2 test showed that significantly more atherosclerotic cases were present in the abnormal BP class. Sensitivity and specificity values were found to be moderate: 59.2 (95% CI 52.8-65.3) and 63.5 (95% CI 57.6-69.1), respectively, as well as the positive and negative predictive values: 58.7 (95% CI 52.3-64.8) and 64.0 (95% CI 58.1-69.6). However, odds ratio showed promising result: 2.53 (95% CI 1.76-3.63).
Conclusion: It seems that the difference between central and brachial BP can be a predictor of atherosclerosis in asymptomatic subjects, and is worth to measure.

P7.10
ARTERIAL STIFFNESS IS A DETERMINANT OF INCREASED LEVELS OF AMINO TERMINAL PRO-B-TYPE NATRIURETIC PEPTIDE ÷ THE ROTTERDAM STUDY

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Objective: Arterial stiffness is one of the main determinants of the workload of the left ventricle. Amino-terminal pro B-type natriuretic peptide (NT-proBNP) is released by cardiomyocytes in response to left ventricular wall stress. The aim of this study was to investigate whether arterial stiffness is an independent determinant of amino-terminal pro B-type natriuretic peptide (NT-proBNP).
Methods: Cross-sectional study of a large population-based cohort free of cardiovascular disease in Rotterdam, The Netherlands ($n = 5{,}138$).
Results: Mean age was 67.4 ± 7.6 years in men and 68.7 ± 8.2 in women. Median NT-proBNP was lower in men than women (6.7 versus 10.0 pmol/l [57 versus 86 pg/ml], $p < 0.001$). In men, measures of arterial stiffness correlated with NT-proBNP (PP, $r = 0.331$; PWV, $r = 0.258$; CD, $r = -0.266$, all $p < 0.001$). These associations remained significant after adjustment for age, body mass index, heart rate, smoking, diabetes, renal function, total and high density lipoprotein cholesterol and use of lipid lowering and antihypertensive medication (PP, $r = 0.195$; PWV, $r = 0.100$; CD, $r = -0.092$, all $p < 0.001$). In women, associations were weaker (PP, $r = 0.245$; PWV, $r = 0.235$; CD, $r = -0.232$, all $p < 0.001$), but also remained significant after multivariable adjustment (PP, $r = 0.083$; PWV, $r = 0.051$; CD, $r = -0.066$, all $p < 0.02$).
Conclusions: Measures of arterial stiffness are independently associated with NT-proBNP serum levels in older subjects. The associations are stronger in men than in women.