P7.03: MARATHON RUNNERS HAVE INCREASED AORTIC STIFFNESS


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P3.11 INCREASED CAROTID PLAQUE OCCURRENCE IN MEN WITH THE FIBRILLIN-1 2-3 GENOTYPE

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Background: Fibrillin-1 is an important constituent of the vascular wall and earlier studies have indicated an effect of the fibrillin-1 2-3 genotype on blood pressure as well as aortic stiffness. The aim was to determine if the Fibrillin-1 2-3 genotype is associated with increased cardiovascular morbidity/mortality in middle-aged individuals.

Methods: The fibrillin-1 genotype was characterized by PCR in 5765 individuals (2424 men, 3341 women 45-69 yrs) recruited from the Cardiovascular Cohort in Malmö Diet and Cancer-study. The intima media thickness (IMT) of the common carotid artery (CCA) was visualised by B-mode ultrasound. The follow up on the number of cardiovascular events (myocardial infarction and stroke) as well as all cause mortality was monitored during 1991 to 2001.

Results: The most common genotypes were 2-2, 2-3 and 2-4 which accounted for 92.2% (n = 5317) of the individuals. There were no differences between the three genotypes regarding age, blood pressures, smoking, glucose, lipids, CCA diameter and IMT. Regarding the occurrence of plaque in the CCA the men with the 2-3 genotype had more plaque than the 2-2 and 2-4 genotypes, (54% vs 46% and 50%, p < .007). The follow up (mean 8.55 yrs) of cardiovascular events and mortality did however not differ between the genotypes.

Conclusions: The increased plaque occurrence in the carotid artery of middle-aged men with fibrillin-1 2-3 genotype indicates a pathologic arterial wall remodelling with a more pronounced atherosclerotic burden. The effect of the 2-3 genotype on cardiovascular events and mortality seems however to be minor.

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P7.01 CAROTID ATHEROSCLEROSIS AND ENDOTHELIAL DISFUNCTION IN YOUNG AND MIDDLE-AGED MEN WITH CORONARY ARTERY DISEASE

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Objective: To determine whether the structural status of carotid arteries and abnormal flow-mediated dilatation (FMD) in the brachial artery identify young and middle-aged men with coronary artery disease (CAD).

Methods: A total of 78 men aged 28 to 50 (mean 43 ± 5) years underwent carotid ultrasound and endothelial function measurements. Angiographically documented CAD was present in 49 patients. Those with arterial hypertension, diabetes mellitus or marked hypercholesterolemia (level of LDL cholesterol >4.9 mmol/l) were excluded from the study.

Results: Patients with CAD more often were smokers, had a history of premature CAD and low level of HDL cholesterol. The mean carotid intima-media thickness (IMT) was 0.88 ± 0.23 mm for patients with CAD and 0.76 ± 0.18 mm for patients without CAD (p < 0.01). The presence of a carotid IMT > 0.9 mm was not significantly differing in both groups. Carotid plaques were present in 45 (91.8%) patients with CAD and in 8 (27.6%) patients without CAD (p < 0.001). Patients with CAD more often had multiple plaques (86.7% vs 13.8%, p < 0.001). Mean brachial artery FMD was less in patients with CAD (4.5 ± 2.8% vs 5.8 ± 2.2%, p = 0.03), but the occurrence of abnormal FMD was the same in both groups.

Conclusion: The presence of carotid plaques in young and middle-aged men is associated with the risk of occurrence of CAD and may be considered as a more powerful surrogate marker for coronary atherosclerosis than the presence of impaired brachial artery FMD and increase in carotid IMT.
Conclusions: Marathon runners have increased aortic stiffness, as well as central and peripheral haemodynamic parameters. These findings could contribute to precisely assess cardiovascular risk in marathon runners focusing on the proper training volumes, frequency and duration.

**P7.04**
**PROGRESSIVE ARTERIAL STIFFENING IN RENAL TRANSPLANT RECIPIENTS + RESULTS OF 28-MONTH FOLLOW-UP**

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Recent follow-up studies showed no change or even short-term improvement of arterial stiffness after kidney transplantation. Data from general population and end-stage renal disease patients suggest, that PWV increases with age of 0.07-0.08 m/s for each year of life. It was shown recently that reduced glomerular filtration rate (GFR) is associated with increased arterial stiffness in RTR. We investigated the change of PWV during follow-up and its relationship with graft function. Carotid-femoral PWV increased in renal transplant recipients despite stable graft function range. Comparison was calculated as (PWV2-PWV1)/PWV1. Clinical and laboratory data were analyzed to identify factors associated with ΔPWV. Results are shown as mean ± SD.

<table>
<thead>
<tr>
<th>Baseline</th>
<th>Follow-up</th>
<th>P</th>
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<tbody>
<tr>
<td>PWV (m/s)</td>
<td>9.1 ± 1.7</td>
<td>9.8 ± 2.0</td>
</tr>
<tr>
<td>Body mass (kg)</td>
<td>73.7 ± 13.9</td>
<td>75.4 ± 13.6</td>
</tr>
<tr>
<td>SBP (mmHg)</td>
<td>132 ± 17</td>
<td>137 ± 19</td>
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<tr>
<td>DBP (mmHg)</td>
<td>83 ± 11</td>
<td>84 ± 10</td>
</tr>
<tr>
<td>MAP (mmHg)</td>
<td>99 ± 12</td>
<td>102 ± 12</td>
</tr>
<tr>
<td>PP (mmHg)</td>
<td>50 ± 11</td>
<td>53 ± 14</td>
</tr>
<tr>
<td>eGFR (ml/min/1.73m2)</td>
<td>55 ± 16</td>
<td>56 ± 16</td>
</tr>
</tbody>
</table>

Serum Ca, P, Ca x P product, hsCRP did not change during follow-up. Significant positive correlation was found between ΔPWV and serum phosphorus (r = 0.27; p < 0.05) and Ca x P product (r = 0.25; p < 0.05) but not with body mass, BMI, SBP, DBP, MAP, PP, Ca, eGFR, hsCRP.

Arterial stiffness increased in renal transplant recipients despite stable graft function. Phosphorus metabolism disturbances might be involved in arterial stiffening in RTR.

**P7.05**
**ASSOCIATION BETWEEN RENAL FUNCTION AND ARTERIAL STIFFNESS IN NEVER-TREATED HYPERTENSIVES**

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Introduction: Hypertension and renal dysfunction are associated with increased arterial stiffness. Arterial stiffness is a marker of cardiovascular disease and predictor of cardiovascular risk. We assessed the relationship between renal function and arterial stiffness in never-treated hypertensives.

Methods: We enrolled 388 consecutive essential hypertensives (mean age 52.1 ± 12 years), who had no established cardiovascular disease. Arterial elastic properties were evaluated with carotid-femoral pulse wave velocity (PWV). Renal function was evaluated with blood creatinine and estimated glomerular filtration rate, measured by the simplified Modification of Diet in Renal Disease (MDRD) formula and the Cockroft-Gault formula.

Results: In multivariable regression analysis PWV significantly correlated with blood creatinine levels (p < 0.05, adjusted R² = 0.224) and estimated GFR by the Cockroft-Gault formula (p = 0.05, adjusted R² of model = 0.222), as well as by the MDRD formula (p < 0.05, adjusted R² of model = 0.223). (Figure) The abovementioned correlations were independent of age, sex, body-mass index and mean blood pressure.

Conclusion: This is the first study in never-treated hypertensives that shows a weak but significant relationship between the degree of GFR loss and arterial stiffness, even in individuals with GFR values within the normal renal function range.

**P7.06**
**CENTRAL BLOOD PRESSURE AND AUGMENTATION INDEX OF HEALTHY YOUTH**

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Background: The clinical importance of central blood pressure (BP) and heart rate corrected augmentation index (AIXHR75) has been gradually increasing in recent years.

Objectives: We measured the peripheral and central BP, the AIXHR75 of healthy volunteers with special regard to diurnal variation (8 AM, 12 PM, 5 PM) and gender difference.

Methods: The measurements were carried out using the SphygmoCor (AtCor Medical, Australia) device.

Results: 52 young subjects (23 males, 29 females) were included in the study. The average age was 23.6 ± 2.1 years. The peripheral and central systolic and diastolic BP values did not show any significant diurnal variation either for males, or females. All BP values of the males were higher than that of females (p < 0.001). The peripheral systolic BP were higher than the central systolic pressure during all three times of measurement (p < 0.001). The differences for males were 14.3 ± 3.7 mmHg; 17.4 ± 3.6 mmHg, and 17.8 ± 3.1 mmHg (p < 0.001), respectively. The values of the AIXHR75 were the highest in the morning, and it gradually decreased during the day for both genders (p < 0.01). The females AIXHR75 were higher than that of males (p < 0.001).

Conclusions: We suppose that it is important to determine central BP by non-invasive measurement, especially in young individuals, since the peripheral BP measured at the brachial artery does not reliably represent the actual central pressure conditions. Furthermore we conclude that the AIXHR75 shows a considerable diurnal variation and gender difference.