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### **P.057: AORTIC DISTENSIBILITY BY NUCLEAR MAGNETIC RESONANCE IN ESENTIAL HYPERTENSION**

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thickness (IMT) is a marker of early atherosclerosis that is correlated with traditional risk factors and is predictive of subsequent myocardial infarction and stroke. Furthermore, possible differences in the pathophysiology of common carotid artery IMT and femoral IMT might allow the exploration of differential gene regulation in specific vascular beds.

**Methods:** The current data included 63 probands (mean age  $44.83 \pm 7.41$ ) and 77 relatives (mean age  $45.35 \pm 8.14$ ), from 63 families. B-mode carotid and femoral ultrasonography was used to determine mean IMT of common carotid (CCA) and common femoral artery (CFA). Variance component methods were used to estimate heritability from the normalized deviates.

**Results:** Variances explained by all final covariates (includes sex, age, blood pressure, smoking, total cholesterol, HDL cholesterol, triglycerides, diabetes status, body mass index) for mean CCA and mean CFA IMT were 0.393 and 0.394, respectively. Multivariable -adjusted heritability were 0.232 for mean CCA and 0.141 for mean CFA IMT (all  $P < 0.005$ ).

**Conclusion:** These data suggest that genetic factors independent of traditional cardiovascular risk factors more influence to CCA IMT than to CFA IMT. Although we found that acquired risk factors contribute progressively to IMT. Future studies of genetic linkage and gene candidate association are warranted to identify specific genetic variants predisposing early symptoms of atherosclerosis in specific vascular beds.

#### P.057

##### AORTIC DISTENSIBILITY BY NUCLEAR MAGNETIC RESONANCE IN ESSENTIAL HYPERTENSION

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It is demonstrated that Essential Hypertension is accompanied by a reduction of large artery distensibility (Dist), which represents a marker of demonstrated prognostic significance. Dist can be assessed by echotracking derived systo-diastolic changes in aortic diameter versus blood pressure changes. However, a less operator dependent and more precise assessment might be obtained by nuclear magnetic resonance (NMR). This study was done to compare aortic (Ao) Dist obtained by echotracking and NMR in normotensive and hypertensive patients. We studied 14 treated essential hypertensives (age  $36 \pm 3.5$  years, blood pressure  $126 \pm 3/78 \pm 1.7$  mmHg means  $\pm$  SE) and 15 matched normotensives controls (blood pressure  $116 \pm 3.0/73 \pm 2.4$  mmHg). Systodiastolic changes in thoracic (T, 1 cm above the celiac tripod) and abdominal (A, 1 cm above bifurcation) Ao were obtained by either method. Dist was calculated via the Reneman formula using tonometric carotid pulse pressure. NMR Dist values were systematically greater than the echotracking one (Hypertensives T  $7.2 \pm 0.5$  vs  $3.0 \pm 0.5$ , A  $6.0 \pm 0.5$  vs  $2.9 \pm 0.4$  1/mmHg  $10^{-1}$ , Normotensives, T,  $8.6 \pm 0.5$  vs  $5.2 \pm 0.5$ , A  $7.5 \pm 0.5$  vs  $3.6 \pm 0.3$  1/mmHg  $10^{-1}$   $p < 0.05$ ). The correlation between RMN and echotracking obtained values was significant. Dist was systematically and significantly lower in H than N ( $p$  always  $< 0.05$ ). No significant differences were observed between NMR T and A aAo arterial diameter. Thus, Ao Dist may be underestimated by echotracking method. Data obtained by the two approaches are similarly capable of detecting Dist reduction in hypertension. This scores in favour of continuing use of the much low expensive echotracking method.

#### P.058

##### ENDOTHELIAL DYSFUNCTION AS MEASURED BY FLOW MEDIATED DILATATION (FMD) IN CARDIOVASCULAR RISK ASSESSMENT

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**Introduction:** FMD has been proposed as a tool in cardiovascular (CV) risk stratification. However, this has only been studied in relatively small, high risk populations.

**Objective:** We investigated whether FMD was related to CV risk factors and intima media thickness (IMT) in a low risk population, the Nijmegen Biomedical Study (NBS).

**Method:** FMD and IMT were measured non-invasively in the brachial and the common carotid artery, respectively, using ultrasound. The NBS is a low risk

population based cohort, aged 50–70 years. Interim analysis of FMD and IMT were performed in 337 subjects (mean age 60.3 year, % male 57.5). All traditional clinical and biochemical CV risk factors were determined.

**Results:** Mean IMT was  $0.83 \pm 0.11$  mm. Mean FMD was  $1.45 \pm 2.45\%$ . After correction for age and gender, all CV risk factors were significantly correlated to IMT (Pearson's R 0.11-0.33), explaining 42% of the variance in IMT. However, for FMD no significant correlations with any of the CV risk factors were found (Pearson's R 0.007 -0.13), except for TC and apoB. All CV risk factors explained only 9.5% of the variance in FMD whereas 6% of the variation in FMD was explained by IMT.

**Conclusion:** In our low risk population based cohort, aged 50-70 years old, FMD was not related to most of the CV risk factors whereas IMT contributed significantly to the variation in FMD. Our results question the additive value of FMD compared to IMT in terms of CV risk assessment, in older low risk populations.

#### P.059

##### IS INCREASED SYSTOLIC BLOOD PRESSURE THE MAIN REASON FOR CARDIOVASCULAR DISEASES?

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It is very well known that women in reproductive period are naturally better protected against cardiovascular diseases than men of the same age. The reasons for these are not clear.

For better determination of possible differences between gender we measured ECG, systolic (SBP), diastolic (DBP) and pulse pressure (PP), heart rate (HR), variability of HR (HRV) and pressure, cardiac output (CO), stroke volume (SV) and peripheral vascular resistance (SVR) at rest, during mental stress (3 minutes of standard arithmetic challenge) and during recovery in the group of 24 healthy males and 38 aged-matched females (19-22 years old).

HR did not differ between both groups at rest and recovery after stress, but was statistically significant higher ( $p < 0.05$ ) during mental stress in females. There was no difference in SBP, DBP or PP at rest, during stress and during recovery. There were no differences in HRV, variability of SBP or DBP and in SV also. But CO was greater in females, especially during mental stress ( $p < 0.05$ ), and SVR was smaller in females at rest, during mental stress and during recovery ( $p < 0.05$ ) when compared to the group of males.

There were no differences in SBP or DBP between males and females. The main differences observed were in CO and SVR. The question arises: is increased systolic or diastolic pressure the main reason for cardiovascular diseases or the reason lies somewhere in the different CO or SVR between males and females?

#### P.060

##### BAROREFLEX SENSITIVITY AND THE QUALITY OF BLOOD PRESSURE REGULATION

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The slope of the simultaneously changing blood pressure with heart rate (baroreflex sensitivity - BRS) is supposed to be a measure of the quality of arterial pressure regulation. In an attempt to discover early mechanisms of cardiovascular alterations we monitored different parameters in healthy, young volunteers: physically trained (N = 24) and aged-matched sedentary controls (N = 35).

We measured ECG, systolic (SBP) and diastolic blood pressure (DBP), cardiac output (CO), stroke volume (SV), peripheral vascular resistance (SVR) and BRS first at rest and then during slow breathing. Slow breathing (6 breaths/min) is one of the manoeuvres that are believed to increase vagal tone.

A spectral analysis of RR intervals was done by the autoregression method. We determined the area under the power spectrum curves over the high frequency (HF) band (0.15-0.4 Hz) and the low frequency (LF) band (0.04-0.15 Hz).

RR intervals, SBP, DBP and BRS were nearly the same in trained and untrained volunteers at rest and during slow breathing. There were also no difference in heart rate variability parameters except the significant difference ( $p < 0.05$ ) between groups in LF/HF during slow breathing. The