P.048: AORTIC SYSTOLIC BLOOD PRESSURE: ESTIMATION FROM THE POINT OF SYSTOLIC AUGMENTATION IN THE DIGITAL ARTERY WAVEFORM

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PVF and WSS, relative differences of 6.8% (p = 0.05) and -1.15% (p < 1) respectively were evidenced. The estimations based on Poiseuille theory present a significant underestimation of both maximum and mean PVF as well as maximum WSS by comparison to the results obtained through Womersley profiles fitting. No significant difference was observed for the mean WSS.

P.O.44

ROLE OF INTEGRIN $\alpha$1/$\beta$1 IN THE CARDIOVASCULAR EFFECTS OF ANGIOTENSIN II

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Integrin $\alpha$1 knockout mice ($\alpha$1/-) were used to investigate the role of the integrin $\alpha$1$\beta$1 in the cardiac and vascular functions of angiotensin II (AngII)-induced hypertension. Carotid artery (CA) elasticity was measured by incremental elastic modulus (Einc)-wall stress curves using an ultrasonic echocardiography (Echoprobe, France) and the applanation tonometry using the Complior®. Carotid-femoral arteries (CF) were used to evaluate the non-invasive assessment of arterial stiffness by measuring PWV (Complior®). Several disease conditions are associated with an increased risk of vascular events. Direct evaluation of arterial structure and function remains elusive at the clinical level. We now report the results of pulse wave velocity in contrasting diseases.

Patients and Methods: We studied 200 consecutive patients assisted at the out-patient department of a public central hospital: (1) Obesity (OB, n = 60); (2) Type 2 Diabetes Mellitus (DM2, n = 60), Sexual Erectile Dysfunction (SED, n = 80). Patients were compared to controls (C, n = 40). Pulse wave velocity was measured between the carotid-radial arteries (CR) and between the carotid-femoral arteries (CF) with a computerized pressure transducer device (Complior®).

Results: Compared to controls, values at both sites were significantly increased in every disease condition: CR (m/s): (C) 7.03 ± 1.67; (OB) 8.32 ± 1.48; (DM2) 8.44 ± 3.20; (SED) 11.63 ± 2.10; CF (m/s): (C) 5.87 ± 1.92; (OB) 7.80 ± 2.04; (DM2) 11.31 ± 3.27; (SED) 13.08 ± 4.26. CR and CF PWV were directly and significantly related. Higher CR than CF levels were found only in the C group, with no difference in the OB group, and higher CF than CR levels in DM2 and SED groups (p < 0.05). Body volume was a general significant factor for PWV, across diagnostic groups.

Discussion: Non-invasive assessment of arterial stiffness by measuring PWV establishes arterial dysfunction in several pathological conditions associated with an increased cardiovascular risk, even when this is still a matter of debate, namely OB and SED. Increased arterial stiffness is most marked in larger elastic arteries like the aorta (CF-PWV) and reverses the normal PWV gradient against smaller-muscular arteries (CR-PWV).

P.O.46

INSIGHTS FROM PULSE WAVE VELOCITY ACROSS CONTRASTING DISEASES

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Objectives: Several disease conditions are associated with an increased risk of vascular events. Direct evaluation of arterial structure and function remains elusive at the clinical level. We now report the results of pulse wave velocity in contrasting diseases.

Patients and Methods: We studied 200 consecutive patients assisted at the out-patient department of a public central hospital: (1) Obesity (OB, n = 60); (2) Type 2 Diabetes Mellitus (DM2, n = 60), Sexual Erectile Dysfunction (SED, n = 80). Patients were compared to controls (C, n = 40). Pulse wave velocity was measured between the carotid-radial arteries (CR) and between the carotid-femoral arteries (CF) with a computerized pressure transducer device (Complior®).

Results: Compared to controls, values at both sites were significantly increased in every disease condition: CR (m/s): (C) 7.03 ± 1.67; (OB) 8.32 ± 1.48; (DM2) 8.44 ± 3.20; (SED) 11.63 ± 2.10; CF (m/s): (C) 5.87 ± 1.92; (OB) 7.80 ± 2.04; (DM2) 11.31 ± 3.27; (SED) 13.08 ± 4.26. CR and CF PWV were directly and significantly related. Higher CR than CF levels were found only in the C group, with no difference in the OB group, and higher CF than CR levels in DM2 and SED groups (p < 0.05). Body volume was a general significant factor for PWV, across diagnostic groups.

Discussion: Non-invasive assessment of arterial stiffness by measuring PWV establishes arterial dysfunction in several pathological conditions associated with an increased cardiovascular risk, even when this is still a matter of debate, namely OB and SED. Increased arterial stiffness is most marked in larger elastic arteries like the aorta (CF-PWV) and reverses the normal PWV gradient against smaller-muscular arteries (CR-PWV).
THE INSULIN SENSitizer ROSIGLITAZONE IMPROVES ENDOTHELIAL

 These data suggest that, although endothelium derived NO has
min in recovery (49.5 ± 2.8 bpm, p < 0.01) and decreased heart rate (65.6 ± 3.5 mmHg, p < 0.01) and RAIX (50.2 ± 4.5 vs. 70.2 ± 6.5 mmHg, p < 0.01) and decreased heart rate (65.6 ± 3.5 mmHg, p < 0.01) and after exercise, heart rate, heart rate, heart rate, MP and PVR were similar before and after LN-NMA and saline. However, LN-NMA attenuated the exercise induced fall in RAIX so that RAIX was higher after LN-NMA compared to saline at 15 min in recovery (49.5 ± 5.3 vs. 36.0 ± 4.4%, p < 0.02).

Conclusion: These data suggest that, although endothelium derived NO has little effect in regulating PVR during/after exercise, it may have a role in mediating exercise induced changes in the pulse waveform.

Poster Presentations S39

P.049

EFFECTS OF INHIBITION OF NITRIC OXIDE SYNTHASE ON THE PERIPHERAL ARTERIAL WAVEFORM RESPONSE TO EXERCISE

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Introduction: Exercise reduces systolic augmentation in the peripheral pulse wave, an effect similar to that produced by the nitric oxide (NO) donor nitroglycerin (NTG). The changes produced by exercise persist into the recovery period for ~30 min. The aim of this study was to investigate if the exercise induced changes are dependent on endothelium-derived NO. We used the NO synthase inhibitor Nω-nitro-L-arginine (LN-NMA) to test this.

Methods: Healthy volunteers (n=10, 5 female, aged 19 to 33 years) participated in a 2-phase randomised controlled cross-over study. LN-NMA (6 mg/kg i.v. over 5 min) and saline placebo were given immediately before exercise on two occasions separated by at least 5 days. Mean arterial blood pressure (MAP by Finopress), radial augmentation index (RAIX by SphygmoCor) and cardiac output (innocor) measurements were made at baseline, during infusion of LN-NMA/saline immediately before exercise, during exercise (except for radial artery measurements) and during recovery. Peripheral vascular resistance (PVR) was calculated from MAP and cardiac output. During exercise, workload increased from 25 W to 150 W by increments of 25 W at 2 min intervals.

Results: Before exercise, LN-NMA increased mean arterial blood pressure (85.1 ± 3.8 vs. 101.2 ± 4.3 mmHg, p < 0.01), peripheral vascular resistance (16.4 ± 0.7 vs. 24.7 ± 1.7 mmHg/ml/min, p < 0.01) and RAIX (50.2 ± 4.5 vs. 70.2 ± 6.5 mmHg, p < 0.01) and decreased heart rate (65.6 ± 5.7 mmHg, p < 49.1 ± 2.8 bpm, p < 0.01) and after exercise, heart rate, heart rate, RAIX and PVR were similar before and after LN-NMA and saline. However, LN-NMA attenuated the exercise induced fall in RAIX so that RAIX was higher after LN-NMA compared to saline at 15 min in recovery (49.5 ± 5.3 vs. 36.0 ± 4.4%, p < 0.02).

Conclusion: These data suggest that, although endothelium derived NO has little effect in regulating PVR during/after exercise, it may have a role in mediating exercise induced changes in the pulse waveform.

Poster Presentations S39

P.050

THE INSULIN SENSitizer ROSIGLITAZONE IMPROVES ENDOTHELIAL FUNCTION IN PATIENTS WITH TYPE 2 DIABETES ON INSULIN

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Aim: Thiazolidinediones (TZDs) are insulin sensitizers used to improve glycaemic control in diabetic patients. TZDs have also been reported to improve endothelial function in obese patients with insulin resistance and in diabetic patients on oral treatment. However, little is known about the vascular effects of TZDs in patients with type 2 diabetes treated with insulin. The aim of this study was to assess the effect of rosiglitazone on endothelial function in type 2 diabetic patients treated with insulin.

Methods: Thirty-one diabetic patients without known coronary artery, cerebrovascular or peripheral arterial disease, who were already on an insulin regime, were randomized into 2 groups; no treatment was added in group A (n = 14), while rosiglitazone (4 mg od) was added in group B (n = 17) for 6 months. Flow-mediated dilation (FMD) in the brachial artery was assessed in all patients, at baseline and at follow-up.

Results: At baseline, the 2 groups did not differ in age (mean ± SD, 57.3 ± 6.4 vs 64.7 ± 7.6 years, respectively, p=ns), or any measured variable. In group A there were no significant changes at 6 months in any variable except for diastolic blood pressure that dropped from 79.7 ± 7.2 to 72.1 ± 2.5 mmHg (p < 0.05). In group B a significant reduction in glycated haemoglobin (from 8.8 ± 1.1 to 7.8 ± 1.0%, p < 0.005) and fasting plasma glucose (from 186.1±164 to 144±161 mg/dl, p < 0.05) was observed at 6 months, while FMD significantly improved (from 1.4±1.6 to 2.9±1.8%, p < 0.005).

Conclusions: In insulin-treated type 2 diabetic patients, treatment with rosiglitazone for 6 months has a beneficial effect on glycemic control and endothelial function.

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P.051

EVALUATION OF ENDOTHELIAL FUNCTION WITH NON-INVASIVE METHODS IN DIFFERENT CARDIOVASCULAR DISEASES

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The aim of our study was to evaluate microvascular reactivity and arterial stiffness with non-invasive methods in patients with different cardiovascular risk factors. Following blood pressure measurement, skin microcirculation was studied with laser Doppler flowmetry (Periflux 5001). The effect of local heating (HL; 44°C, 1 min) and non-ablative cutaneous laser hyperaemia (LH; 10–40 mJ, mean 14.7 ± 4.8 mJ) on cutaneous blood flow was studied. Significant increase of FMD (by 10.9%) was observed. There was an insignificant rise monitored which should be attributed to the pulse decrease from 74.3 to 71.3 bpm.

Materials and Methods: 50 hypertensive patients (mean age 54.7±14.3 years, 28 male, 22 female) were randomized into 2 subgroups as follows: subgroup A (n=14) received beta-blockers (propranolol) on an ongoing adjusted dose and subgroup B (n=17) were added with rosiglitazone (4 mg od) for 6 months. Flow-mediated dilation (FMD) of the brachial artery was assessed in all patients, at baseline and at follow-up.

Results: At baseline, the 2 groups did not differ in age (mean ± SD, 57.3 ± 6.4 vs 64.7 ± 7.6 years, respectively, p=ns), or any measured variable. In group A there were no significant changes at 6 months in any variable except for diastolic blood pressure that dropped from 79.7 ± 7.2 to 72.1 ± 2.5 mmHg (p < 0.05).

In group B a significant reduction in glycated haemoglobin (from 8.8 ± 1.1 to 7.8 ± 1.0%, p < 0.005) and fasting plasma glucose (from 186.1±164 to 144±161 mg/dl, p < 0.05) was observed at 6 months, while FMD significantly improved (from 1.4±1.6 to 2.9±1.8%, p < 0.005).

Conclusions: In insulin-treated type 2 diabetic patients, treatment with rosiglitazone for 6 months has a beneficial effect on glycemic control and endothelial function.

Poster Presentations S39

P.052

BLOOD PRESSURE AND LARGE ARTERIAL ELASTIC PROPERTIES. BENEFIT OF BETAXOLOL IN HYPERTENSION

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Background and Aim: Large artery damage is a major contributory factor to cardiovascular morbidity and mortality of patients with hypertension. As shown ASCOT and other study, beta-blockers appear to be less effective than other drugs in improving outcome in hypertensive patients, and a potential explanation may be that beta-blockers are less effective in reducing arterial stiffness. However, the aim of this study was to prove otherwise while assessing the direct effect of cardioselective beta-adrenoceptor blocker betaxolol (Lokren) on arterial distensibility in patients with mild, moderate and severe hypertension.

Materials and Methods: 50 hypertensive patients (mean age 54.7±14.3 years, 28 male, 22 female) received betaxolol in individual titrated doses 10-40 mg (mean dose 14.7±4.8 mg) daily for 3 months. The examination comprised routine tests, ECG, blood glucose, total cholesterol, triglycerides. The assessment of arterial stiffness was done by way of measuring brachial pulse wave velocity (baPWV). Systemic arterial stiffness was estimated through brachial Augmentation Index (Alx). Endothelial function was calculated based on flow-mediated dilation (FMD) parameters. Results: The treatment produced a significant reduction in systolic (by 8.1 mmHg) and diastolic BP (12.3 mmHg). No significant rise of blood pressure was monitored which should be attributed to the pulse decrease from 74.3 to 60.8 beat/min (p < 0.001). Significant decrease of baPWV (by 8.1%) and increase of FMD (by 10.9%) was observed. There was an insignificant rise