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P8.1: FEASIBILITY OF 24-HOUR CENTRAL BLOOD PRESSURE MEASUREMENTS–THE ISAR HEMODIALYSIS STUDY

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Results: Compared to normal TT levels, TD patients (n=19) were older (59 ± 8 vs 52 ± 10 years, $P < 0.05$) with higher BMI (28.6 ± 4.0 kg/m² vs 27.0 ± 4 kg/m², $P < 0.05$). They had lower EF, SV and inversely, higher EA/ELV compared to subjects with normal TT. TD was also associated to a higher mitral E/E' and PWV-f. The association remained significant in multivariate analysis after adjustment for age and cardiovascular risk factors.

Conclusion: Testosterone deficiency associates to an unfavorable LV performance as well to central arterial stiffness, with an adverse outcome on cardiac energetic. This information adds clinical value on hormone lower level, in both cardiovascular risk assessment and stratification of future preventive strategies.

P7.12 CIRCULATING VASCULAR GROWTH FACTORS AND AORTIC INDICES IN GHANAIS WITH DIABETES AND HYPERTENSION

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Objectives: Impaired angiogenesis may be one mechanism linking large artery stiffness to organ damage. We investigated the relationship between arterial stiffness and regulators of angiogenesis as circulating vascular growth factors: vascular endothelial growth factor (VEGF), angiopoietin (Ang)-1, Ang-2, which together with endogenous VEGF induces proliferation and the sprouting of new blood vessels, in Ghanaians with type 2 diabetes (T2DM) and hypertension (HTN).

Methods: 63 T2DM plus HTN patients, 44 patients with T2DM only, 54 patients with HTN only and 39 subjects without T2DM nor HTN were included in the study. Aortic pulse wave velocity (PWVao) and aortic systolic pressure (SBPao), augmentation index (Aix) and aortic pulse pressure (PPao) were measured with Tensiomed's Arteriograph. Fasting blood samples were measured for blood glucose, lipid profile, Ang-1, Ang-2 & VEGF.

Results: T2DM plus HTN patients had higher levels of Ang-1 (44.3 vs 36.1 and 36.3 ng/ml; $p = 0.004$) & Ang-2 (875.65 vs 764.4 and 710.35 pg/ml; $p = 0.009$) than T2DM only and HTN only patients respectively. Ang-2 levels were positively associated with PWVao ($r = 0.17$, $p = 0.03$), SBPao ($r = 0.28$, $p < 0.01$), and Aix ($r = 0.22$, $p < 0.01$). When all the vascular growth factors were forced into multiple regression analysis, adjusting for age, BMI, systolic BP and fasting glucose, only Ang-2 emerged significantly related to PWVao ($\beta = 0.027$, $p = 0.02$), SBPao ($\beta = 0.54$, $p < 0.01$), Aix ($\beta = 0.3$, $p < 0.01$).

Conclusion: Vascular growth factors were related to arterial stiffness indices, Ang-2 independently, in Ghanaians, and higher in patients with both diabetes and hypertension than with either condition alone.

P7.13 DOES CAROTID ARTERY APPLANATION TONOMOMETRY CAUSE BAROREFLEX ACTIVATION?

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Introduction: Carotid artery applanation tonometry is widely used to assess carotid-femoral pulse wave velocity and the local carotid artery pressure waveform. However, the substantial pressure applied locally to the carotid artery with applanation tonometry, might evoke a baroreceptor response. This response would lead to changes in heart rate (HR) and blood pressure waveforms, influencing the intended measurements. In this study, we assessed whether carotid applanation tonometry has an influence on HR.

Methods: In 22 hypertensive subjects, HR was assessed during carotid as well as femoral applanation tonometry by continuous finger pulse waveform recording (Nexfin). Subjects were in supine position. Both carotid and femoral acquisitions were measured in alternation and in triplicate. Median averaging over the three measurements was used to obtain a subject's median HR during carotid as well as femoral tonometry.

Results: HR during carotid tonometry and femoral tonometry was 64.0 ± 9.3 bpm and 64.6 ± 9.0 bpm, respectively. Difference (carotid-femoral) was -0.7 ± 2.4 bpm ($p = 0.198$, two-sided t-test, 95% CI: $[-1.7, 0.4]$ bpm). Given

a power (1- β) of 0.8 and $\alpha = 0.05$, our study was powered to statistically detect a 1.4bpm HR difference.

Conclusion: We conclude that carotid artery tonometry influences HR by at most 1.4bpm, which appears clinically insignificant.

P8.1 FEASIBILITY OF 24-HOUR CENTRAL BLOOD PRESSURE MEASUREMENTS—THE ISAR HEMODIALYSIS STUDY

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Background: Calculation of central blood pressure (BP) values using oscillometric systems at brachial level obtain feasible office values, but also allow a 24-hour determination of 24-hour central BP. We were interested in the feasibility of the determination of 24-hour central BP measurements in end-stage renal disease patients.

Methods: In the ISAR hemodialysis study 556 chronic hemodialysis patients were investigated. 24-hour central BP was measured using the mobil-o-graph (IEM, Germany). Measurement started after a short dialysis interval prior to dialysis and lasted for 24-hours. In a preliminary analysis we describe the results of the first 327 patients with respect to feasibility of central BP measurements.

Results: The mean age of the patients was 65.0 ± 15.1 years. 224 patients were male (69%), 103 patients were female (31%). Out of these 327 patients 16.948 measurements were performed, reflecting an average of 52 measurements per patient. The mean number of measurements was $>70\%$ for the whole cohort. Out of the 16.948 measurements 13.069 measurements had a "high quality" and 3.879 had an "acceptable" quality" reflecting a ratio of 3.4. In younger patients <40 years more "high quality" measurements were present (ratio 9.8). This ratio reduced with age (2.6).

Discussion: We examined the feasibility of 24-hour central BP measurement in chronic hemodialysis patients. With $>70\%$ performed central BP measurement throughout the 24-hours period this method offers acceptable results for further investigation. The role of different qualities of the determined central measurement needs further investigation especially whether quality of measurements plays a role in the prediction of cardiovascular events.

P8.2 PROGRESSION OF CAROTID ARTERY REMODELING AND STIFFNESS IN HYPERTENSIVE PATIENTS WITH OR WITHOUT DIABETES MELLITUS: A COHORT PROSPECTIVE STUDY

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Aim: To evaluate the progression over time of carotid and aortic stiffness and carotid remodeling in hypertensive patients, according to the presence of diabetes mellitus.

Methods: In this prospective observational study, 124 hypertensive patients (32 with Type 2 diabetes -HTDM-, 92 without -HT-) were evaluated at Visit 0 (V0) and after a 3.4 ± 1.0 -year follow-up (V1). Carotid-femoral pulse wave velocity (PWV), carotid intima-media thickness (cIMT), carotid stiffness (CS) and circumferential wall stress (CWS) were assessed.

Results: In HT BP was unchanged, due to increased antihypertensive drugs (1.3 ± 1 to 1.7 ± 0.8 , $p = 0.001$); in HTDM there was a decrease in DBP (82.5 ± 9.1 to 76.2 ± 8.6 mmHg, $p = 0.006$) and an improvement of metabolic control (blood glucose 168 ± 45 to 147 ± 31 mg/dl; LDL 104 ± 34 to 82 ± 24 mg/dl, $p < 0.05$). At V0 PWV, cIMT and CS were significantly higher in HTDM than in HT (10.9 ± 2.1 vs 8.6 ± 1.5 m/s, $p < 0.0001$; 808 ± 125 vs 731 ± 151 μ m, $p = 0.01$; 7.23 ± 1.25 vs 6.69 ± 1.21 m/s, $p = 0.03$ respectively). These variables were unchanged during follow-up. Conversely carotid diameter, which was similar in the two groups at V0, increased in HT (7.47 ± 1.11 to 7.8 ± 0.8 mm, $p = 0.01$) but not in HTDM (7.7 ± 0.9 to 7.7 ± 0.8 mm, $p = 0.83$) as well as CWS (HT 55 ± 12 to 59 ± 17 kPa, $p = 0.03$; HTDM 52 ± 13 to 54 ± 21 kPa, $p = 0.53$).

Conclusions: In a cohort of hypertensive patients, followed-up for about 3 years and treated according to routine clinical practice, aortic and carotid stiffness, as well as cIMT did not change over time. Interestingly, in non-diabetic hypertensive patients there was a progression of carotid artery