

-0.08, -0.00; $p=0.03$). Although we observed no interaction with treated hypertension, we observed a significant multiplicative interaction between APOE e4 allele and untreated hypertension ($p=0.045$ for global composite score; $p=0.02$ for the TICS). Specifically, compared to normotensive women with APOE e3/3 genotype, APOE e4 allele carriers with untreated hypertension scored lower by 0.27 standard units on the global composite score (95% CI: -0.33, -0.20; $p<0.0001$), which was cognitively equivalent to the difference in performance observed among women 5.4 years apart in age.

Conclusions: Women with hypertension and at least one APOE e4 allele had worse average cognitive function compared with women without hypertension with the e3/3 genotype; this difference was amplified among APOE e4 allele carriers with untreated hypertension.

Funding Acknowledgements: NIH: UM1 CA186107; R01 CA49449; Harvard/Oxford epidemiology collaborative program

116

Cardiac stress markers during acute mental stress and risk of future cardiovascular events

A. Wentzel. *North-West University Potchefstroom Campus, Physiology (HART), Potchefstroom, South Africa.* On behalf of HART (Hypertension in Africa Research Team)

Background: Acute mental stress influences the autonomic reactivity of the heart and is a recognized risk factor for cardiovascular disease (CVD). The pattern and magnitude of cardiac responses upon acute mental stress exposure may also contribute to excessive myocardial strain and resultant cardiovascular episode risk. However, acute changes in cardiac stress markers [high-sensitive cardiac troponin T (cTnT) and N-terminal pro-brain natriuretic peptide (NT-proBNP)] in response to acute mental stress, is unknown. Whether changes in these levels differ between Africans and Caucasians and relate to hemodynamic and autonomic reactivity, remain unclear.

Purpose: To establish that alpha-adrenergic vascular, volume overload responses will be associated with depressed heart rate variability (HRV) (SNS hyperactivity) and acute increases in cardiac stress (cTnT and NT-proBNP) upon acute mental stress exposure. Subsequently, to determine the possibility of the aforementioned responses' predictive power regarding cardiovascular episodes, pre-clinical structural alterations and increased volume-loading conditions.

Method: A cross sectional design was followed and included a bi-ethnic cohort ($N=388$). An acute mental stress task (STROOP), was administered for 1 minute whilst continuous blood pressure (BP) and 10-lead ECG responses were obtained. Fasting blood samples for cTnT, NT-proBNP and cardiovascular risk markers were obtained pre- and 10 min post-stress (% change or delta) to evaluate cardiac stress and hemodynamic reactivity.

Results: Africans exhibited greater vascular, α -adrenergic [increased diastolic blood pressure (Δ DBP), total peripheral resistance (TPR) and decreased Δ Stroke volume (SV)], Δ cTnT and Δ NT-proBNP responses, associated with depressed heart rate variability (HRV), during acute mental stress ($p<0.001$). Caucasians presented a central cardiac β -adrenergic response, accompanied by increases in heart rate, SV, and decreased Δ TPR, Δ cTnT and Δ NT-proBNP responses. cTnT cut points were computed to predict stress induced increases in DBP, a volume loading risk. Both pre-stress and stress cTnT cut points at 4.2ng/L predicted 24 hour diastolic hypertension in Africans ($p<0.001$). Cardiovascular episode risk (R wave of the aVL lead) was associated with the STROOP novel derived 4.2ng/L cTnT cut point in Africans only [Odds ratio 4.10; $p<0.001$]. No such association was evident in the Caucasians.

Conclusion: Acute mental stress elicited an autonomic α -adrenergic activation pattern, accompanied by excessive volume overload, depressed heart rate variability and cardiac stress hyper-reactivity in Africans exclusively. This response to acute stress may increase this African population's risk for ischemic episodes and heart disease.

Funding Acknowledgements: National Research Foundation South Africa (NRF SA); Medical Research Council (MRC) SA

117

Arterial hypertension after heart transplantation: prevalence, predictors and prognostic impact. Single centre prospective study

A. Shevchenko¹, S. Gautier¹, E. Nikitiina¹, O. Shevchenko². ¹Institute of Transplantology and Artificial Organs, Moscow, Russian Federation; ²Russian State Medical University, Cardiology CME cathedra, Moscow, Russian Federation

Objectives: The study was aimed to assess arterial hypertension (AH) prevalence, risk factors, and its impact on event-free survival among cardiac transplant recipients.

Patients and methods: End-stage heart failure patients who received a heart transplant (HTx) between 01.01.2013 and 31.12.2016 in National Research Centre of Transplantology and Artificial Organs and survived 90 days were sequentially included and followed-up for 1556.2 \pm 42.9 (95% CI= 1472.1–1640.2) days. Young patients (<18 y/o) and patients after repeated or multi-organ transplantation were excluded. 140 mm Hg of systolic and 90 mm Hg of diastolic blood pressure (BP) levels were assumed as cut-off levels for the diagnosis and therapeutic target for AH treatment. All-cause death, irreversible cardiac transplant

failure and any coronary event (acute coronary syndromes or revascularization) were defined as primary endpoints.

Results: 353 cardiac recipients aged 45.6 \pm 1.6 years (18.1% females and 81.9% males) enrolled in the study. AH prevalence was 17.6% in anamnesis and 42.8%, 62.3%, and 71.4% after 3 months, 1 year, and 3+ years, respectively, in post-transplant period. The risk of developing post-transplant AH was independent of age, sex, initial diagnosis, mean tacrolimus levels and the number of acute cellular rejections. Post-transplant AH was significantly related to the initial body mass index ($p=0.026$), serum creatinine ($p<0.001$), preexisting hypertension (RR=1.36, $p=0.022$) and renal failure, as well as donor heart posterior wall thickness ($p=0.034$), post-transplant dialysis (RR=1.85, $p<0.001$), and antibody-mediated rejection episodes (OP=1.7, $p=0.001$). BP reached target levels during 18 \pm 11 days in all patients after diuretics, ACEi, or calcium antagonists (CA) were administered in monotherapy or combination. There were 82 primary events during follow-up. When patients who developed AH during the first 90 days after HTx ($n=151$) and those who did not ($n=202$) were compared, no significant difference in event-free survival was found (RR=1.21, 95% CI = 0.83–1.77). Hypertensive patients who received ACEi ($n=113$) showed significantly better survival when compared to those who received CA (RR=0.52, 95% CI=0.28–0.98). ACEi and CA subgroups comparison revealed significant differences in systolic BP (123.8 \pm 8.5 vs 130.0 \pm 9.4 mmHg, respectively, $p<0.001$), diastolic BP (77.5 \pm 6.0 vs 82.6 \pm 7.7 mmHg, $p<0.001$, respectively) and mean LV EF (67.7 \pm 6.2% vs 62.6 \pm 7.4%, respectively, $p<0.001$).

Conclusions: This single-centre study which included 59.7% of patients who received cardiac transplants in Russia in 2013–2016 showed the high prevalence of AH. Anamnestic hypertension, renal failure, donors heart hypertrophy and antibody-mediated transplant rejection were related to the development of post-transplant AH. Well-controlled AH had no impact on prognosis, but ACEi were related to better event-free survival than calcium antagonists. Several mechanisms could be proposed.

118

Nt-proBNP combined with R wave in aVL lead predicts mortality better than echocardiographic left ventricular mass in hypertension

P.Y. Courand, A. Grandjean, C. Mouly-Bertin, M. Serraille, B. Harbaoui, P. Lantelme. *University Claude Bernard of Lyon, cardiology department Hôpital Croix-Rousse Lyon Sud, Lyon, France*

Background and purpose: Plasma NT-proBNP and R wave in aVL lead (RaVL) have been associated with mortality in hypertensive patients. The aim of the present study was to test the prognostic value of their combination, in comparison to left ventricular mass index assessed by echocardiography (LVMI). Design and method

1104 hypertensive patients having at baseline an assessment of plasma NT-proBNP, a resting 12-lead ECG and an echocardiography were included. LVMI was assessable in 921 patients. After a median follow-up of 8.5 [5.4–13.3] years, 110 deaths occurred, 62 of which were from cardiovascular cause.

Results: Optimal thresholds of RaVL and plasma NT-proBNP to predict mortality were 0.7 mV and 150 pg.mL⁻¹, respectively. A 3-modality variable based on RaVL and NT-proBNP, was built: 0 when none were above the threshold, 1 or 2 when only one or both were above the threshold, respectively. After adjustment for cardiovascular risk factors, previous cardiovascular event and LVMI in Cox regression analysis, we observed a gradual increase risk for patients having 1 marker above the threshold (hazard ratio (HR) 1.76; 95% confidence interval (CI) (1.08–2.86) for all-cause mortality, HR 2.18; 95%CI (1.06–4.46) for cardiovascular mortality) or 2 markers above the threshold (HR 2.76; 95%CI (1.51–5.03) for all-cause mortality, HR 3.90; 95%CI (1.69–9.00) for cardiovascular mortality); the prognostic value of the combination of RaVL and NT-proBNP was greater than that of LVMI, which did not reach statistical significance while included in the same model. Similarly, the combination demonstrated the best accuracy to predict outcome in comparison to LVMI (C-index, ROC curves and likelihood ratio test).

Conclusions: Risk stratification in hypertension with the combination of NT-proBNP and RaVL is a simple method that appears more powerful and accurate than LVMI. This approach should be considered as a game changer in hypertension

Funding Acknowledgements: financial support: grants of Fédération Française de Cardiologie

119

Angiotensin converting enzyme inhibitor versus angiotensin receptor blockers on the top of calcium channel blocker in development of new-onset diabetes mellitus in hypertensive Korean patients

Y.H. Kim¹, A.-Y. Her¹, S.-W. Rha², B.G. Choi², A. Mashaly², Y. Park², W.Y. Jang², W. Kim², J.Y. Choi², E.J. Park², J.O. Na², C.U. Choi², E.J. Kim², C.G. Park², H.S. Seo². ¹Kangwon National University Hospital, Chuncheon City, Korea Republic of; ²Korea University Guro Hospital, Seoul, Korea Republic of

Background: Rare comparative studies investigated the relationship between combination therapy of antihypertensive drugs and the incidence of new-onset diabetes mellitus (NODM). The aim of this study was to evaluate which combination therapy, calcium channel blocker (CCB) with angiotensin converting enzyme inhibitor (ACEI) or CCB with angiotensin receptor blocker (ARB), is better to pre-