P10: COMBINATION OF FLOW-MEDIATED DILATION AND PULSE WAVE VELOCITY PROVIDES FURTHER CARDIOVASCULAR RISK STRATIFICATION IN PATIENTS WITH CORONARY ARTERY DISEASE: FLOW-MEDIATED DILATION JAPAN STUDY A (FMD-J A)

Yukihito Higashi, Tatsuya Maruhashi, Hirofumi Tomiyama, Bonpei Takase, Toru Suzuki, Yasuki Kihara, Akira Yamashina


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calcification. Development of aortic calcifications shares many similarities with atherogenesis, we thus hypothesize that people with short TL may have higher risk to develop aortic valve stenosis.

Methods: Aortic valves were obtained from 11 patients undergoing valve replacement surgery. Each valve cusp was macroscopically dissected into healthy, intermediate and calcified regions. DNA was extracted by phenol/ chloroform method and TL measured by Southern blots of the terminal restriction fragments.

Results: TL from healthy and intermediate valve regions were similar and then merged in a non-calcified group. In all subjects, TL of calcified regions were shorter than TL in non-calcified regions. The gap between TL of non-calcified and calcified regions was 0.53kb (p<0.007).

Conclusion: Calcified aortic valve regions have shorter telomere length than non-calcified. Directionality of the relationship between telomere dynamics and aortic valve stenosis will be explored in vitro.

P8
THE EFFECT OF CAFFEINE ON MENTAL STRESS RELATED CARDIOVASCULAR RESPONSE
Ziva Melik 1, Ksenija Cankar 2

1University of Ljubljana, Faculty of medicine, Institute of physiology, Ljubljana, Slovenia
2University of Ljubljana, Faculty of Medicine, Institute of Physiology, Ljubljana, Slovenia

Background: Caffeine, the most widely used pharmacologically active substance causes mental stimulation and a slight raising of blood pressure. The aim of our work was to evaluate the effect of caffeine on the cardiovascular system during rest and during mental stress.

Methods: RR interval duration, arterial blood pressure and Laser-Doppler (LD) flux were monitored in 40 healthy volunteers (aged 21.98 ± 0.9 years) before and after ingestion of 200 mg of caffeine. The measurements were performed during rest (360s), during mental stress (90s) and during relaxation after mental stress (510s). The measurements were performed twice: under the effect of caffeine and under the effect of placebo. The study was approved by the National Medical Ethics Committee; written informed consent was obtained from each subject.

Results: During resting condition RR interval (ms) increased (910.49 ± 130.5 before and 958.96 ± 130.66 after) (p<0.05), systolic blood pressure (mm Hg) increased (119.35 ± 14.3 before and 127.54 ± 15.9 after) (p<0.05), diastolic blood pressure (mm Hg) increased (68.7 ± 11.2 and 76.2 ± 11.6) (p<0.05), LD flux decreased (150.05 ± 96.4 and 115.15 ± 86.7) (p<0.05) and temperature decreased (30.92 ± 3.5 and 29.71 ± 3.5) (p<0.05) after ingestion of caffeine. During mental stress systolic and diastolic blood pressure increased significantly less, RR interval was nearly the same and LD flux after mental caffeine. During mental stress systolic and diastolic blood pressure increased (68.7 ± 11.2 and 76.2 ± 11.6) (p<0.05), and temperature decreased (30.92 ± 3.5 and 29.71 ± 3.5) (p<0.05) after ingestion of caffeine. During mental stress systolic and diastolic blood pressure increased significantly less, RR interval was nearly the same and LD flux after mental stress was increased (119.35 ± 14.3 before and 127.54 ± 15.9 after) (p<0.05), diastolic blood pressure (mm Hg) increased (68.7 ± 11.2 and 76.2 ± 11.6) (p<0.05), LD flux decreased (150.05 ± 96.4 and 115.15 ± 86.7) (p<0.05) and diastolic blood pressure (mm Hg) increased (68.7 ± 11.2 and 76.2 ± 11.6) (p<0.05), LD flux decreased (150.05 ± 96.4 and 115.15 ± 86.7) (p<0.05) and temperature decreased (30.92 ± 3.5 and 29.71 ± 3.5) (p<0.05) after ingestion of caffeine. During mental stress systolic and diastolic blood pressure increased significantly less, RR interval was nearly the same and LD flux after mental stress increased more and earlier after ingestion of caffeine.

Conclusion: Although caffeine raises blood pressure it has favourable effect on the cardiovascular system during and after mental stress.

Poster Session I — Clinical aspects
P10
COMBINATION OF FLOW-MEDIATED DILATION AND PULSE WAVE VELOCITY PROVIDES FURTHER CARDIOVASCULAR RISK STRATIFICATION IN PATIENTS WITH CORONARY ARTERY DISEASE: FLOW-MEDIATED DILATION JAPAN STUDY A (FMD-J A)
Yukihito Higashi 1, Tatsuya Maruhashi 1, Hirofumi Tomiyama 2, Bonpei Takase 3, Toru Suzuki 4, Yasuki Kihara 1, Akira Yamashina 5

1National Defense Medical College Research Institute, Tokorozawa, Japan
2University of Ljubljana, Faculty of Medicine, Institute of Physiology, Ljubljana, Slovenia
3National Defense Medical College Research Institute, Tokorozawa, Japan
4University of Ljubljana, Faculty of Medicine, Institute of Physiology, Ljubljana, Slovenia
5University of Ljubljana, Faculty of medicine, Institute of physiology, Ljubljana, Slovenia

Background: The usefulness of vascular function tests (FMD) and brachial-ankle pulse wave velocity (baPWV) in 462 patients with CAD for assessment of the predictive value of FMD and baPWV for cardiovascular events in a prospective multicenter observational study. The first primary outcome was coronary events, and the second primary outcome was a composite of coronary events, stroke, heart failure, and sudden death.

Results: A median follow-up period was 49.2 months. First primary outcome occurred in 56 patients and the second primary outcome occurred in 66 patients. FMD above the cutoff value of 7.1%, derived from receiver-operator curve analyses for the first and second primary outcomes, was significantly associated with lower risk of the first (hazard ratio [HR], 0.27; 95% confidence interval [CI], 0.06–0.74; P = 0.008) and second (HR, 0.32; 95% CI, 0.09–0.79; P = 0.01) primary outcomes. baPWV above the cutoff value of 171 cm/s was significantly associated with higher risk of the first (HR, 1.86; 95% CI, 1.01–3.44; P = 0.04) and second (HR, 2.19; 95% CI, 1.23–3.90; P = 0.008) primary outcomes. Among the four groups stratified according to the combination of cutoff values of FMD and baPWV, stepwise increases in the calculated risk ratio for the first and second primary outcomes were observed.

Conclusions: Both FMD and baPWV were independent predictors of cardiovascular events in patients with CAD. The combination of FMD and baPWV provided further cardiovascular risk stratification.

P11
EFFECT OF AGING ON THE PRESSURE ASYMPTOTE AND TIME CONSTANT OF EXPONENTIAL DIASTOLIC AORTIC PRESSURE DECAY IN HUMANS
Tetsu Yamakado

Suzuka University of Medical Science, Suzuka, Japan

There are few data regarding the effect of aging on pressure asymptote (Pasympytote) and time constant (Tau) of exponential diastolic aortic pressure (AoP) decay in normal human heart. To investigate this issue, we analyzed high-fidelity AoP, measured by use of a catheter-tipped manometer in 71 normal subjects who underwent diagnostic cardiac catheterization but who were found to have normal coronary artery and LV function. Subjects who had hypertension, diabetes or renal disease were excluded. There were 49 men and 22 women, ranging in age from 20 to 80 years. We analyzed diastolic AoP sampled every 5 ms from the point of minimal dp/dt to the top of ECG-R waves of the next beat, and estimated Tau and Pasympytote by the exponential best fitting with a variable Pasympytote results. Systolic AoP were significantly increased with age, but mean and diastolic AoP remained unchanged. Pasympytote was 58.5 ± 8.1 mmHg and Tau was 436 ± 105 msec. Pasympytote show no significant age-related change, but strongly and positively correlated with systolic, diastolic and mean AoP (R2 = 0.39, 0.70 and 0.66, respectively). For Tau, it was weakly and positively related with both age and AoP (Age: R2 = 0.20, AoP: R2 = 0.08–0.20).

Conclusion: We documented Pasympytote and Tau of the Windkessel with the beating heart in normal humans. Tau was associated with aging, whereas Pasympytote, which increased with the level of AoP, did not vary with aging per se, at least until the ninth decade. These data may provide insight into the understanding of AoP physiology.

P12
VALIDATION OF SYNTHESIZED CENTRAL PRESSURE WAVEFORM IN PATIENTS WITH AN INFRARENAL AORTIC ANEURYSM BEFORE AND AFTER ENDOVASCULAR REPAIR
Suzanne Hulewijn 1, Lennart van der Velde 1,2, Majorie van Helvert 1,2, Thomas Urgert 1,2, Gerike Buitenhuys 1,2, Erik Groot Jebbink 1,2, Michel Reijnen 1

1Department of Vascular Surgery, Rijnstate, Arnhem, the Netherlands
2Multimodality Medical Imaging group, Technical Medical Centre, University of Twente, the Netherlands

Background: Abdominal aortic aneurysm (AAA) disease is mainly treated by endovascular aneurysm repair (EVAR), which shows short-term advantages in terms of lower morbidity and mortality compared to open repair. Long-term outcome seems to be inferior with regard to survival. This could partly be explained by a change in dynamics of the aortic wall, including aortic central pressure (CP) waveforms, induced by the endograft (Figure). Arterial stiffness is predictive of cardiovascular disease but has not been investigated in AAA-patients. We investigated if CP and Augmentation index (AIX) can be calculated correctly in AAA-patients.