P168: FEASIBILITY STUDY OF LOCAL PULSE WAVE VELOCITY ESTIMATION IN THE CAROTID ARTERY WITH MULTI-BEAM LASER DOPPLER VIBROMETER

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Conclusion: Left Main Coronary Artery (LMCA) disease is prognostically the most important coronary lesion. LMCA differs from the other coronaries in having high elastic content. Aortic Pulsatility (AP) is an independent predictor of cardiovascular events in CAD. We hypothesized that pulsatile stress may be an independent determinant of disease in the LMCA.

Methods: This was a prospective cohort study in patients undergoing coronary angiography between the years 2011 and 2016 (n = 4633, 25% female) at King Abdul Aziz Cardiac Center, Riyadh, Saudi Arabia. We excluded patients with acute myocardial infarction, cardiogenic shock and significant valvular disease. Aortic systolic and diastolic blood pressures (BP) were measured in the ascending aorta. Mean Arterial Pressure (MAP) by direct integration of the BP curve and Pulse pressure (PP) as difference between systolic and diastolic BP. AP was calculated as PP/MAP. CAD was defined as >50% stenosis in any major vessel.

Results: Six percent of the population had LMCA disease (mean age 60 ± 11 years, 25% female). LMCA disease was associated with higher PP (69 ± 22 vs. 5.8 ± 18, p < 0.0001) despite similar MAP (94 ± 16 vs. 94.5 ± 14, p = 0.92) compared with non-LMCA disease. AP was significantly higher (0.72 ± 0.30) in LMCA disease compared with; 3-vd (0.63 ± 0.32); 2-vd (0.61 ± 0.28), 1-vd (0.58 ± 0.31) and non-obstructive CAD (0.52 ± 0.26) (p < 0.0001). In a stepwise regression model, AP was an independent predictor of LMCA disease (R² = 0.68, P < 0.0001) even when adjusted for potential confounders, including MAP, age and gender.

Conclusions: LMCA disease is independently associated with high AP. Considering aortic pulsatile stress to be an independent cardiovascular prognosticator, stiffness of the LMCA may play an important role in plaque formation, hitherto ignored.

References

P169
RELATIONSHIP BETWEEN COMMON CAROTID DISTENSIBILITY/AORTIC STIFFNESS AND LEFT VENTRICULAR MORPHOLOGY AND FUNCTION IN RHEUMATOLOGIC PATIENTS
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Introduction: Arterial stiffness is known to be associated with atherosclerosis, cardiac remodelling and cardiovascular diseases. In recent studies, common carotid artery rigidity was seen to better predict cardiac morphology and function than similar to aortic parameters. The aim of the study was to determine the relationship between carotid/aortic stiffness indices and the main echocardiographic measures in patients with rheumatological disease.

Methods: 208 participants were evaluated (57.4 ± 11.4 yr; males = 36.1%); 65.9% were previously diagnosed with rheumatoid arthritis, 20.2% with psoriatic arthritis and 13.9% with ankylosing spondylitis. In each subjects medical history, use of drugs and glycometabolic status was assessed. Echocardiography, blood pressure (BP) measurement and carotid ultrasonography were performed. Carotid Distensibility (CD) and Aortic Stiffness (AoS) were measured as indices of arterial stiffness.

Results: Mean Left Ventricular Mass indexed by body surface area (LVM/BSA) and Relative Wall Thickness (C6) were 98,8 and 32.3 percentile of the normal reference population and 16.3% with target organ abnormalities data were evaluated. To understand the role of chronic inflammation in arterial stiffness, comparative analyzes were performed with a control group with CVR factors and with a group of healthy individuals.

Results: The sample consisted mainly of women (61.2%), characterized by 30.6% of arterial hypertension, 32.7% of dyslipidemia, 4.1% of diabetes and 14.3% of obesity. BP median value was 8.32mmHg, with 30.6% PWV > 90th percentile of the normal reference population and 16.3% with target organ lesions. >IMT in the common carotid artery (CCA) and plaques were observed in 10.4% and 41.7%, respectively. In the obtained linear regression model, the variables systolic central blood pressure and IMT in the ACC showed a statistically significant impact on PWV. In the established comparisons, PWV did not present statistically significant differences. Conclusion: The integrated analysis of the collected data made it possible to requalify the patients in the context of the CVR, allowing the early adoption of control measures. Chronic inflammation associated with BD did not lead to significant differences in arterial stiffness.

References