P11.09: SHEAR STRAIN IN THE COMMON CAROTID ARTERIAL WALL RELATED TO AGE?

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The primary trigger for myocardial infarction and stroke is destabilization of atherosclerotic plaques. It has been hypothesized that locally increased longitudinal shear strain (LSS) facilitates the development of vulnerable plaques [1]. LSS is defined as the change of longitudinal deformation in radial direction. Ultrasound strain imaging allows local assessment of LSS [2]. In 8 asymptomatic volunteers (age: 20–64 yrs.), radiofrequency (rf) ultrasound data of the common carotid artery were acquired in longitudinal direction using a Medison Accuvix V10, equipped with an LS-13 linear array transducer (f0 = 8.5 MHz). In each volunteer rf data were acquired at three beam steering angles during multiple cardiac cycles [3]. Simultaneously the ECG-signal was recorded. LSS was estimated in a selected region-of-interest (ROI) using a coarse-to-fine cross correlation based algorithm [3,4].

The estimated shear strain showed a cyclic pattern with an increase during the systolic and a decrease during the diastolic phase. The maximum LSS ranged between 3 and 17% and appeared to decrease with age. This decrease could be related to stiffening of the arterial wall. This study provides initial normal values of LSS in the common carotid artery. The maximum LSS appears to decrease with age. Further validation in patients will open the door for clinical predictions of plaque rupture. The inhibition of aortic PWV on LV concentric geometry is independent LV-RWT when a consistent number of risk factors was simultaneously and additional to that of peripheral, central or 24h BP.

Objectives: To identify the frequency and character of cardiovascular events in patients with systemic lupus erythematosus (SLE) and to examine the risk factors for their development.

Methods: The database of SLE was looked through to determine the frequency of cardiovascular events among the patients with the following case control study being designed. Seventy two patients formed the case control study out of which 27 had a cardiovascular event in the past and 45 were controls without the event matching the control by disease duration.

Results: Since 2003 year 175 patients were diagnosed with SLE and treated at tertiary rheumatology center. Twenty seven out of them have experienced the cardiovascular events and some of them for several times. In total 37 cardiovascular events were diagnosed. Angina pectoris was the most common event. Patients with cardiovascular events were older at the time of the event, more likely to have higher plateau counts in the blood, lower hemoglobin and less disease activity index score compared to controls. Cases were also more likely to have taken higher doses of corticosteroids [17.8(11.5) vs. 12.9(8.0)] and higher white blood cell count in the blood [7.54(3.53) vs. 5.44(2.71)]. In multivariable logistic regression analyses, only leukocytosis was significant risk factor for the development of cardiovascular events. The other two factors: age and the use of higher steroid doses have drawn near but haven’t crossed the level of statistical significance. This research was funded by a grant (No. MIP – 83/2010) from the Research Council of Lithuania.

Background/Aim: Pulse pressure (PP) is a result of arterial stiffness seen in diabetics patients, but may be a consequence of fluid overload. We examined the role of beta2 –microglobulin (β2 M) in PP in relation to metabolic alterations in patients on different hemodialysis (HD) modalities.

Methods: We studied 76 hemodialyzed patients on regular HD (n = 34), pre-dilution bagged hemodiafiltration (n = 19) and online predilution hemodiafiltration (n = 23). β2 M levels were measured by radioimmunoassay, and the clearance of β2M was assessed by Kt/V for β2M. Arterial stiffness was measured as carotid femoral pulse wave velocity, and PP was derived. Insulin levels were measured using immunoradiosassay, and insulin resistance was calculated using homeostasis model assessment insulin resistance (HOMA-IR). Serum bicarbonate levels were measured using a blood gas analyzer, and percent sodium removal was calculated.

Results: β2 M levels predict increased PP (p = 0.02) adjusting for age, HD modalities, HD duration, HOMA-IR and percent sodium removal. β2 M was positively associated with HOMA-IR (r = 0.306, p = 0.007). Serum bicarbonate levels and carotid-femoral pulse wave velocity were inversely associated (r = −0.719, p = 0.001).

Conclusions: β2 M levels were positively associated with PP, which was influenced mainly by dialysis modality fluid and sodium balance and less by arterial stiffness. β2 M levels were positively associated with insulin resistance. Uremic acids may contribute to arterial stiffness.

Objective: To compare the presence and extent of coronary calcification in young and middle-aged patients with new onset coronary artery disease (CAD) with matched controls without a history of CAD.