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**PULSE-COR REGISTRY: non invasive LV stiffness assessment in subjects with essential hypertension**

**Authors:**
O Torbas¹, YU Sirenko¹, O Rekovets¹, S Kushnir¹, ¹NSC Institute of Cardiology M.D. Strazhesko, Symptomatic hypertension - Kiev - Ukraine,

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BACKGROUND: Left ventricle (LV) diastolic dysfunction for a long time had been associated with its hypertrophy. But recent studies have demonstrated that it is more associated with LV fibrosis which is also the cause of poor prognosis. Unfortunately, there is no proven tool for its clinicall assessment. The aim of the study was to demonstrate which of LV stiffness parameters are associated with arterial stiffness which we can measure using validated techniques.

METHODS: PULSE-COR is one center registry started in 2011 and still running. We included 779 subjects with AH. Final analysis included 320 patients that underwent all necessary diagnostic procedures from whom we have identified a separate cohort of patients (n=283) with essential AH without any significant comorbidities. We used SphygmoCor device (AtCor, Australia) for the determination carotid-femoral pulse wave velocity (cfPWV). Also we measured CAVI and ankle-brachial index (ABI) with the mean of VaSera 1500 (Fukuda Denshi, Japan). Ultrasound diagnostics included vascular ultrasound with intima-media thickness (IMT) measurement. Echocardiography was done according ASE standardized protocol, LV diastolic function was evaluated according to ASE 2016 guidelines. Ventricle-arterial coupling (VAC) was evaluated using standardized formula. In order to find associations we used Spearman correlation analysis.

RESULTS. Mean age was 53,6±2,0 years, 17 men and 30 women. Mean body mass index 29,8±1,0 m/kg2, mean systolic blood pressure (SBP) was 159,8±4,5 mmHg, diastolic BP (DBP) was 97,9±2,6 mmHg, pulse BP (PBP) was 62,0±3,5 mmHg and heart rate (HR) was 76,6±2,2 bits per min. VAC was significantly associated with both (left and right) CAVI (R=0,698; P=0,012 and R=0,683; P=0,014, respectively). ABI was significantly associated with both E/A and E/e’ (R=0,716; P=0,006 and R=0,764; P=0,002, respectively). Ea was significantly associated with IMT (R=0,491; P=0,24), total cholesterol (R=0,499; P=0,07), low-density lipoproteins (R=0,687; P=0,001), cfPWV was associated with almost the same factors (R=0,248; P=0,001 for correlation with IMT, R=0,382; P=0,01 for correlation with low-density lipoproteins). Ees was significantly associated with E/A (R=0,159; P=0,007); E/e’ (R=0,130; P=0,029), end diastolic volume (R=0,644; P<0,001) and with blood lymphocytes (R=0,678; P=0,001).

CONCLUSIONS: We have found that VAC was significantly associated with arterial elasticity (CAVI), but we have not any correlation with CAVI for none of its component (Ea or Ees). Arterial elastance (Ea) was associated with similar factors as large arteries stiffness (cfPWV). Ventricle elastance instead was associated with diastolic dysfunction. All these components play role in clinical LV stiffness assessment.