

## P2139 Echocardiographic data

Parameters	Controls (n = 58)	Low NT-proBNP (n = 32)	p	Low NT-proBNP (n = 32)	High NT-proBNP (n = 35)	p
RWT	0.41 ± 0.04	0.44 ± 0.05	0.002	0.44 ± 0.05	0.45 ± 0.07	0.593
LV EDVI (ml/m <sup>2</sup> )	40.1 (36.0 - 44.5)	41.7 (37.3 - 47.2)	0.193	41.7 (37.3 - 47.2)	37 (30.7 - 43.9)	0.076
LV EF (%)	60.0 (58.0 - 63.0)	55.0 (54.0 - 58)	< 0.001	55.0 (54.0 - 58)	55.0 (52.0 - 58.0)	0.899
E' mean (cm/s)	8.89 ± 1.94	6.47 ± 1.18	< 0.001	6.47 ± 1.18	6.09 ± 1.30	0.092
E/E' mean	8.83 ± 2.53	12.7 ± 3.26	< 0.001	12.7 ± 3.26	16.2 ± 6.18	0.009
LAVI max (ml/m <sup>2</sup> )	26.2 ± 5.19	39.9 ± 8.34	< 0.001	39.9 ± 8.34	42.8 ± 12.8	0.277
LAVI min (ml/m <sup>2</sup> )	11.6 ± 3.24	20.9 ± 4.86	< 0.001	20.9 ± 4.86	24.5 ± 8.61	0.041
LA global ef (%)	59.8 ± 4.87	49.1 ± 7.04	< 0.001	49.1 ± 7.04	44.2 ± 6.34	0.004
LA active ef (%)	39.3 ± 6.25	28.3 ± 7.49	< 0.001	28.3 ± 7.49	24.6 ± 6.52	0.035

RWT: Relative Wall Thickness. EDVI: End-diastolic Volume Index. EF: Ejection Fraction. E': peak early diastolic tissue velocity. E/E': peak early filling over early diastolic tissue velocities ratio. LAVI max, min: Left Atrium Volume Index maximal, minimal. ef: emptying fraction.

## P2139

### Plasma natriuretic peptides relate to distinct patterns of left ventricular dysfunction in chronic heart failure with preserved ejection fraction

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**Background:** In HFpEF patients plasma levels of natriuretic peptides (NP) are frequently normal, and in several HFpEF trials outcomes differed between patients with low and high NP levels.

**Purpose:** To assess whether in chronic HFpEF low and high NP plasma levels underlie distinct cardiac structural and functional abnormalities.

**Methods:** Echocardiographic data of 67 stable HFpEF patients were derived from outpatient clinic visits. An age and gender matched control group was identified.

**Results:** Median NT-proBNP was 161 pg/ml with 35.8% of HFpEF patients below the diagnostic cut-off value of 125 pg/ml and 70.1% of HFpEF patients below the eligibility threshold used in several trials (<300 pg/ml). Compared to controls, HFpEF patients with below median NT-proBNP had left ventricular (LV) concentric remodeling, worse systolic function, slower relaxation and higher diastolic stiffness, which was evident from higher E/E' at comparable LV EDVI and from LA dilatation and dysfunction (Table). When HFpEF patients with below median NT-proBNP were compared to those with above median NT-proBNP, LV concentric remodeling, systolic function and relaxation were comparable but diastolic stiffness continued to deteriorate.

**Conclusions:** In patients with above median NT-proBNP, the halted progression of LV concentric remodeling, systolic dysfunction and slow relaxation suggests the continuing deterioration of stiffness to no longer result from cardiomyocyte dysfunction but from interstitial fibrosis. Unequal involvement of cardiomyocytes and interstitium could explain different outcome of trials in HFpEF patients with low and high NP.

## P2140

### Are radial artery flow mediation dilatation and shear rate the new imaging biomarkers in patients with stage B heart failure?

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**Background:** There is growing interest in the application of non-invasive clinical method and tools to assess endothelial dysfunction as a new imaging biomarkers preceding heart failure. There are commercially available ultrasound scanners allowing measurements of the brachial artery flow mediation dilatation (FMD) and shear rate (SR) normalized FMD using 7.5-12 MHz linear array transducers; however the attainable precision in estimating the changes in artery dilation does not exceeds 0.2 mm, far beyond the required one. We are introducing a novel, high frequency scanning using a linear array 20 MHz imaging combined with 20 MHz pulsed Doppler, improving the axial resolution to be better than 0.1 mm. We expect that this

approach to the measurements of FMD and SR in radial artery can help to predict early vascular disease.

**Purpose:** To evaluate the degree of radial artery FMD and FMD/SR after 5 minutes of reactive hyperaemia in healthy subjects and in patients with stage B heart failure (HF).

**Methods:** The studies were carried on 14 healthy volunteers (40-71 yr. old) and 14 patients (36-77 yr. old) with stage B heart failure due to coronary artery disease. A standard reactive hyperaemia protocol was employed in the right arm, followed by 3 min measurements of the subject's radial artery dilation and Doppler blood flow velocity measurements. FMD and SR calculations were performed offline. The FMD results were normalized using AUC of shear rate at the radial artery wall.

**Results:** In the healthy group the peak dilated radial artery diameter was in the range (1.97-3.57) mm, mean ± std was in the range 2.64 ± 0.43mm corresponding to a mean increase in overall radial artery diameter of FMD = 15 ± 4.8% (95% CI: 13.3-17.2%), at peak reactive hyperaemic states. The AUC shear rate calculated in time span from cuff release till peak dilation was equal 42730 ± 23630, median 37393 (95% CI: 33383-52078). In the patient's group the peak dilated radial artery diameter was in the range (2.37-3.27 mm), mean ± std was 2.85 ± 0.3mm corresponding to increase in overall radial artery diameter via FMD = 4.6 ± 4% (95% CI: 2.45-6.7%), at peak reactive hyperaemic states. The SR was equal 47761 ± 35871, median 42584, (95% CI: 26084-69438). The FMD/SR, for the healthy group was equal 5.365 ± 4.835·10<sup>-4</sup>, and in patient's group 1.3 ± 0.89·10<sup>-4</sup>.

**Conclusions:** In healthy volunteers the mean increase in radial artery diameter measured via FMD was 15 ± 4.8% while in patients with stage B heart failure FMD was much smaller and was 4.6 ± 4%. The SR normalized FMD, FMD/SR, was equal 5.365 ± 4.835·10<sup>-4</sup> and 1.3 ± 0.89·10<sup>-4</sup> for healthy volunteers and patients, respectively. Both parameters, FMD and FMD/SR showed highly significant univariate association with the occurrence of HF (P < 0.001). Radial artery flow mediation dilatation and shear rate should be considered as new imaging biomarkers in patients with stage B heart failure.

## P2141

### The retrospective analysis of chronic heart failure therapy, prior hospitalization for acute coronary syndrome in patients with atrial fibrillation

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**Objective:** To retrospectively evaluate the therapy of chronic heart failure (CHF) in patients with atrial fibrillation (AF) prior to hospitalization for acute coronary syndrome (ACS).

**Materials and Methods:** The analysis retrospectively included 163 patients with AF who were admitted to medical rehabilitation for ACS at the clinic of the Kirov Medical University from vascular centers. Criteria for inclusion - the passage of rehabilitation for ACS, the presence of AF. Exclusion criteria - absence of OP, prescription of ACS for more than 1 month. We have calculated M ± O, x2. Outpatient and inpatient patient cards were used. The average age of the patients was 64.9 ± 9.7 years. Of these, 55.8% of men and 44.2% of women.

**Results:** CHF before hospitalization had 133 (81.59%) patients (68 (51.13%) men and 65 (48.87%) women). Most CHF was combined with AF, ischemic heart disease and hypertension - 84 (63.16%) people. The average age of patients with CHF was 65.65 ± 9.8 years, the average length of the disease was 2.74 ± 2.8 years. XPS at the level I functional class (FC) had 42 (31.58%), II FC - 55 (41.35%), III FC - 36 (27.07%). No treatment was received at all for CHC 29 (21.8%) patients (I FC - 12 (28.57%), II FK-9 (16.36%), III FK-8 (22.22%)). Therapy with angiotensin-converting