**What influences exercise capacity in male and female with heart failure and preserved ejection fraction of left ventricle?**

Quality of life is a main goal of treatment of patients with chronic heart failure. The evaluation of the ability of an individual to perform exercise appears to be one of the strongest criteria of patient’s subjective and objective well-being. However, factors observed in patients with HFpEF that alter exercise capacity are not unified and can be different dependently on gender.

**Purpose.** To reveal the link between echocardiographic parameters or biomarkers of HF and the results of 6-minute walk test separately in male and female with HFpEF, paying the most attention at diastolic function of left ventricle (LV).

**Materials and methods.** We consequently enrolled 54 patients, who had signs and symptoms of chronic HF II and III class NYHA at the moment of admission. Transthoracic 2D Echocardiography and tissue Doppler were performed to confirm LV diastolic dysfunction (criteria: LV ejection fraction (LVEF)>45%, left atrium diameter (dLA)>40 mm, LV wall thickness>11 mm, E/e’>13). In addition, plasma NT-proBNP level was evaluated to establish HFpEF. Arterial elastance (Ea) was estimated as 0.9 x (arm-cuff systolic pressure/Doppler stroke volume) and ventricular elastance (Ees) was calculated by the well-validated approach of using arm-cuff pressures, Doppler stroke volumes, ejection fraction, pre-ejection and systolic periods. 6-minute walk test was performed according to “ATS Statement: Guidelines for the Six-Minute Walk Test”. Patients with proven coronary artery diseases were not included to avoid the affecting of 6MW test results.

**Results.** 28 women and 26 men were examined. Groups didn’t differ in age (f-71±7,6 vs m-67,3±12,1) and body mass index (BMI) (f-31,5±4,9 vs m- 29,9±5,4), all p>0,05. The correlation analysis revealed an inverse correlation between the LA volume index (LAVI) (f-40,9±6,3; m-42,7±6,9), E/e’ (f-15,1±2,4; m-14,9±1,5), mean pulmonary artery pressure (MPAP) (f-44,6±13,3; m-38,2±11,7), plasma NT-proBNP (f-595,5±430,6; m-673,9±428,3) level and distance of 6MW (f-362,5±65,2; m-433,1±102,3) in both groups of patients. In female there was also inverse correlation between the right ventricle diameter (dRV) (2,9±0,6), Ea (2,1±0,5) and the distance of 6MW; in male inverse correlation was established between the age and the distance of 6MW. Results are shown in the table.

**Conclusions.** Exercise intolerance in patients with HFpEF can be caused by diverse of structural and functional changes in heart muscle and vessels, however, such factors as LAVI, MPAP, E/e’, NT-proBNP correlates significantly with the results of 6MW test. Correlation between age and 6MW distance in men can probably be associated with a presence of multiple comorbidities that are added with age. In women, it can be assumed that correlation between dRV and Ea is determined by mechanisms that provide a female-specific cardiovascular etiology in HFpEF, but still it has to be clarified.

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| Groups | Parameters | | | | | | |
| LAVI | E/e’ | MPAP | NT-proBNP | dRV | Ea | Age |
| Female (n=28) | R= -0,541, p=0,003. | R= -0,471 ,p=0,011. | R= -0,684, p<0,001. | R= -0,719, p<0,001. | - | - | R= -0,479, p=0,013. |
| Male (n=26) | R= -0,687, p<0,001. | R= -0,677, p<0,001. | R= -0,637, p<0,001. | R= -0,768, p<0,001. | R= -0,524, p=0,004. | R= -0,512, p=0,005. | - |

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| female | | male | |
| LAVI/6MW | (коэф детерм 0,293) | age/6MW | (коэф детерм 0,229) |
| E/e’/6MW | (коэф детерм 0,222) | LAVI/6MW | (коэф детерм 0,472) |
| Еа/6MW | (коэф детерм 0,263) | E/e’/6MW | (коэф детерм 0,459) |
| PH/6MW | (коэф детерм 0,468) | PH/6MW | (коэф детерм 0,406) |
| dRV/6MW | (коэф детерм 0,275) | NT-proBNP/6MW | (коэф детерм 0,590) |
| NT-proBNP/6MW | (коэф детерм 0,517) |  |  |