Gender specific differences in functional capacity in asymptomatic patients with isolated severe aortic stenosis

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Risk stratification as well as treatment decision in asymptomatic patients with isolated severe aortic stenosis (AS) is matter of ongoing debate. It has been known that gender-specific difference in left ventricular reaction to AS exists. Female gender has also been linked to increased risk of adverse events after surgical AVR but with better outcome after TAVI. We investigated whether there is a gender difference in functional capacity in asymptomatic patients with isolated severe AS.

Asymptomatic patients with severe AS were prospectively enrolled and underwent cardiopulmonary stress-echocardiography exercise testing (ESE-CPET) on supine ergobicycle, ramp protocol, 15 W/min. Patients with ischemia positive test were excluded (ECG and/or echo)

There were 139 patients, 61 women. There were no gender differences in age (66.36 vs 67.37, p=ns), echo parameters (Vmax 4.54 vs 4.48m/s, AVA 0.62 vs 0.68cm^2, and Pmean 52.6 vs 53.8mmHg, all p=ns), LVEF (68.56 vs 70.90%, p=ns), e/E' (12.74 vs 14.45, p=ns), BNP (112.51 vs 110.55 pg/ml, p=ns) and valvulo-arterial impedance (4.65 vs 5.14mm Hg·ml^{-1}·m^2, p=0.07). Women had higher body mass index (29.05 vs 26.95, p=0.022), lower VO2max (12.96 vs 17.93 ml/kg/m^2, p=0.001) and higher VE/VCO2 slope (33.69 vs 29.01, p=0.003). Univariable and multivariable linear regression analysis were used to test the relation between various clinical and echocardiographic parameters and VO2max. The variables independently associated with the VO2max are shown in table 1, with female gender being the strongest independent predictor of VO2max

Conclusion: Female gender is independent predictor of decreased functional capacity, even when adjusting for other variables, including BMI and echo markers of AS severity. Further studies are needed to determine whether this finding affects the course and outcome of the disease

Multivariant linear regression analysis

VO2max	B	Beta	p	CI95%
Female	–3.389	–0.365	0.002	–5.924–1.453
Age	–0.140	–0.239	0.035	–0.269–-0.010
BMI	–0.312	–0.246	0.028	–0.589–-0.035
Vmax	–5.609	–0.341	0.004	–9.294–-1.924
e/E'	–	–	0.892	–
AVA	–	–	0.589	–
AVAi	–	–	0.819	–
ZvA	–	–	0.752	–
ELI	–	–	0.494	–