



EuroValve

October 24-25 2014, Rome, Italy

www.eurovalvecongress.com



Gender differences in patients with severe aortic stenosis: are women more “rigid”?

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Purpose

Arterial stiffness is an important cause of an increased left ventricle (LV) burden and mortality. Few studies describe gender differences in cardiovascular stiffness in aortic valve stenosis (AVS). Recent simple echocardiographic indexes seems to estimate LV burden in AVS: Valvular Arterial Impedance (Zva) and Energy Loss Index (ELI).

Aim of the study: to identify gender differences in clinical presentation and in cardiovascular stiffness in severe AVS.

Methods

Methods: We studied preoperative clinical and echocardiographic data of 275 pts with severe AVS and preserved LV ejection fraction (mean EF $59.49 \pm 5.77\%$).

Results

We examined 128 males and 147 females (mean age 73.52 ± 6.84)

Clinical characteristics and Laboratory data are shown in [Table 1](#) and [Table 2](#). In [Table 3](#) echocardiographic data

Women had a reduced BMI vs men, but showed higher basal systolic BP whereas men showed higher prevalence of coronary

Table 1. Patients Clinical Presentation

	Men	Women	P
Mean age	72.44±9.01	74.46±8.18	ns
CAD	34%	22%	<.05
Hypertension	66.4	75%	ns
Carotid Atherosclerosis	34%	31%	ns
Diabetes	16%	21%	ns
Dyslipidemia	39%	47%	ns
BSA (m ²)	1.91	1.71	<.0001
Systolic Blood Pressure (mmHg)	144.7±19.24	150.8± 24.5	0.03

Table 2. Laboratory Testing

	Men	Women	p value
Total cholesterol (mg/dl)	183.7±46.5	200.47±47.6	=.004
HDL cholesterol (mg/dl)	54.6±16.8	61.7±19	p=.002
LDL cholesterol (mg/dl)	106.7±33.9	117.39 ±36.4	p=.01
Serum Creatinine (mg/dl)	1.13±0.2	0.76±0.2	.002
Gamma-glutamyltransferase (U/l)	28.09± 40.6	18.2±11.16	<.006
Uricemia (mg/dl)	5.48±1.72	5.05±1.49	<.006
Erythrocytes	4.590.000±.61	4.440.000±.46	<.004
Hemoglobin (g/dl)	13.7±1.6	12.7±1.3	<.0001
Hematocrit(%)	40.9±4.5	38.8±3.8	<.0001
Platelets	194.800±50.7	215.500±60.9	<.003

Table 3. Echocardiographic Data

	Men	Women	p value
Aortic Annulus (mm)	23.8±	22.09±2.7	ns
Effective Orifice Area (EOA cm ²)	0.70±.25	0.59±.19	<.0001
Peak aortic velocity (cm/s)	448.8±54.6	466.2±2.2	.01
Mean aortic gradient (mmHg)	50.9±	55.4±	.009
RWT	0.49	0.53	.04
LV mass (g/m ²)	135.5±34	135.77±36	ns
EDVi (ml/m ²)	97.6±74	82.3±32	.005
ESVi (ml/m ²)	41.08±29	32.9±18	.01
LV EF (%)	58.9±7.8	60.03±7.8	ns
Zva (mmHg/ml/m ²)	5±1.9	5.87±2.2	<.0001
ELI cm ² /m ²	0.4±0.14	0.34±0.12	.04
A wave (cm/s)	101.6 ±34	114.3±29	0.002
E' septal (cm/s)	5.9 ±1.9	5.2±2.2	0.04
E/e'	14.6±7.8	17.6±8.2	.04
Indexed Stroke Volume (ml/m ²)	55.8 ±26	49.4±18	0.03
Indexed Left Atrial Volume (ml/m ²)	44.5±16	42.2±16	.02
LVOT (mm)	20.2 ±	18.1±	<.0001
Aortic CSA (cm ²)	10.25±2	8.13±2	.01
Tricuspid Regurgitation (>2+)	48.%	56%	<.0001
Systolic Pulmonary Pressure (mmHg)	31.51±11	35.6±13	.009
Discharge mean aortic gradient (mmHg)	12.4±6	14.4±5	0.003
Discharge peak aortic velocity (cm/s)	232.4±5	247.5 ±5	.002

Women had a smaller EOA, higher mean pressure gradient, relative to men. In women cardiovascular system is stiffer as shown by worse diastolic function.

Conclusions

Women with severe AVS seems to have a stiffer cardiovascular system.