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## Valvular Heart Disease

### IMPACT OF VALVULO-ARTERIAL IMPEDANCE ON LONG-TERM SURVIVAL IN PATIENTS WITH SEVERE AORTIC STENOSIS AND PRESERVED LEFT VENTRICULAR EJECTION FRACTION: A CARDIAC CATHETERIZATION STUDY

Poster Contributions

Hall C

Saturday, March 29, 2014, 10:00 a.m.-10:45 a.m.

Session Title: Valvular Heart Disease: Pathophysiology, Outcome & Risk

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**Background:** Previous studies suggested valvulo arterial impedance (Zva) may be an independent predictor of mortality in patients with severe aortic stenosis (AS) and preserved left ventricular ejection fraction (LVEF). However, its quantification using echocardiography may be subject to error measurement. Aim of this study is to determine the impact on long-term survival using cardiac catheterization to assess Zva.

**Methods and Results:** Between 2000 and 2010, 768 patients with preserved LVEF (>50%) and severe AS (valve area  $\leq 1\text{cm}^2$ ) without other valvular disease underwent cardiac catheterization. Zva was derived from catheterization data and calculated using following formula: mean aortic gradient+ systolic blood pressure/ stroke volume index. Zva was considered as high when  $>5\text{ mmHg/ml/m}^2$ . Mean age was  $74\pm 8$  years, 42% were female, 46% had associated coronary artery disease and mean LVEF was  $72\pm 10\%$ . Overall, high Zva was found in 42% of all AS patients. As compared to patients with low Zva, those with higher Zva were significantly older ( $p < 0.0001$ ), more often female ( $p < 0.0001$ ); they had significantly smaller aortic valve area ( $p < 0.0001$ ), higher mean gradient ( $p = 0.001$ ), lower indexed stroke volume ( $p < 0.0001$ ) and cardiac output ( $p < 0.0001$ ), significantly higher LVED filling pressures ( $p = 0.03$ ), systolic pulmonary artery pressure ( $p = 0.0005$ ), higher capillary wedge pressure ( $p = 0.006$ ), reduced systemic arterial compliance ( $p < 0.0001$ ), but higher systemic vascular resistances ( $p < 0.0001$ ). Ten-year survival was significantly reduced in patients with higher Zva ( $50\pm 5\%$ ) as compared to those with lower Zva ( $67\pm 3\%$ ;  $p = 0.01$ ). After adjustment for all other risk factors, Zva was independently associated with reduced long-term survival (hazard ratio [HR]=1.12 95% CI: 1.009-1.22;  $p = 0.03$ ).

**Conclusion:** This large cardiac catheterization-based study reports that high Zva obtained invasively is frequent in patients with severe AS, and is associated with hemodynamic abnormalities suggesting a more advanced stage of the disease. It also appears as an independent predictor of survival. Thus, it may be used as an additional parameter for risk stratification of patients with severe AS.