

P301

The prognostic value of preoperative left atrial volume after surgical aortic valve replacement in patients with isolated severe aortic stenosis and preserved left ventricular ejection fraction

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Background: Left atrial (LA) volume is an important cardiovascular prognostic marker. However, data regarding the prognostic value of LA volume in severe AS patients (pts) after surgical aortic valve replacement (AVR) are scarce. Moreover, the predictive role of LA function in AS pts after AVR has not yet been studied. Our study aimed to assess the relationship of LA volume index (LAVi) and function with outcome, in terms of mortality, in severe AS pts who underwent surgical AVR.

Methods: A total of 360 consecutive pts with isolated severe AS (aortic valve area index ≤ 0.6 cm²/m²) referred to our echocardiography laboratory were prospectively screened. Two hundred and seventeen pts with preserved left ventricular (LV) ejection fraction ($\geq 50\%$) and in sinus rhythm were enrolled. All patients underwent a baseline comprehensive echocardiogram, including speckle tracking analysis of both LV and LA strain. Symptomatic pts (142 pts, 65%) that were subject to AVR were followed for a median period of 4 years (IQR 3-6 years). The endpoint was all-cause mortality after AVR. The last update of the survival status was obtained in January 2019. Outcome data were available in 116 severe AS pts that underwent AVR (mean age 63 ± 10 yrs, 56% men), who formed the final study population.

Results: Seventeen (14%) pts died during follow-up. No significant differences were found between nonsurvivors and survivors after AVR in terms of age and cardiovascular risk factors. Nonsurvivors had higher BNP plasma values ($p=.04$) at baseline compared with surviving pts. Survivors and nonsurvivors alike exhibited similar preoperative AS severity and LV systolic function parameters (ejection fraction and global longitudinal strain). Moreover, there were no significant differences between the two groups regarding baseline valvuloarterial impedance, average E/e' ratio, and LA longitudinal deformation parameters. Nonsurvivors had a tendency toward higher LV mass index ($p=.08$). Nonsurvivors had higher preoperative LA volume index (LAVi) (50 ± 12 vs. 44 ± 10 ml/m², $p=.003$). In a multivariable Cox regression analysis adjusted for age, LAVi emerged as the only independent predictor for death in our population study (HR 1.06, 95% CI 1.01-1.11, $p=.02$). A cut-off value for LAVi derived from ROC curve analysis was used to construct Kaplan-Meier survival curves. A value of 43 ml/m² for LAVi predicted all-cause mortality after AVR in severe AS pts with 71% sensitivity and 54% specificity.

Conclusions: In our study, preoperative LAVi predicted death in severe AS pts after surgical AVR. LAVi assessment may improve preoperative risk stratification in patients with severe AS, however further larger prospective studies are needed.

Abstract P301 Figure.

