Introduction: Recent studies revealed that mitral regurgitation (MR) severity may change during exercise in patients with functional MR. Significant exercise-induced increases in MR is associated with poor outcome. By contrast, changes in MR severity during exercise remain undetermined in patients with degenerative MR.

Method and results: Resting and symptom-limited semi-supine bicycle exercise Doppler-echocardiography were performed in 66 consecutive patients (61±15 yrs and 55% of male) with moderate to severe degenerative MR. MR severity was evaluated, at rest and during exercise using effective regurgitant orifice (ERO) and systolic PAP. Systolic pulmonary arterial pressure (PAP) was derived from the peak regurgitant tricuspid pressure gradient. At rest, ERO2 was greater than ERO1 (52±16mm² vs. 31±17mm², p<0.01) and were well correlated (r=0.65, p=0.004). During exercise, ERO2 and ERO1 increase in 71%, 54% and 54% of patients, respectively and there were good correlations between exercise ERO2 and ERO1 (r=0.73, p<0.01). Systolic PAP also increased during exercise (from 29±9 to 52±16mmHg, p<0.01) and changes in PAP during test were correlated with changes in ERO2 and ERO1 (r=0.33, p=0.04 and r=0.44, p=0.004). Moreover, patients with exercise peak PAP>60mmHg had higher exercise ERO2 (33±21mm² vs. 45±22mm², p=0.04) and ERO1 (40±20 vs. 69±27mm², p=0.005) and higher exercise-induced change in ERO1 (−2.7±17 vs. 12±18 mm², p=0.006). After adjustment for age, sex and resting PAP, exercise-induced changes in ERO2 remained associated with changes in PAP (β=0.22, p=0.033)

Conclusion: As in functional MR, degenerative MR can be dynamic and increases during exercise in >50% of patients. Changes in MR severity are associated with exercise-induced changes in systolic PAP, suggesting a potential impact on outcome. Further studies are needed to determine whether exercise-induced increase in MR has prognostic importance.

Achieved Anticoagulation versus Prosthesis Selection for Mitral Mechanical Valve Replacement: A Population-Based Outcome Study

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Background: Thrombo-embolic events (TE) are frequent after mechanical mitral valve replacement (MVR) but their association to anticoagulation quality is unclear and was never studied in a population-based setting with complete anticoagulation record.

Methods: We compiled complete record of all residents of Olmsted County, MN, who underwent mechanical MVR between 1981 and 2004, for all TE, bleedings and international normalized ratios (INR) measured from prosthesis implantation.

Results: In the 112 residents (57±16 years, female 60%) who underwent mechanical MVR, 19,647 INR samples were obtained. While INR averaged 3.02±0.57, almost 40% of INR were below 2 or above 4.5. Thirty-four TE and 28 bleedings occurred during 8.2±6.1 years follow-up. There was no trend of history (P<0.0001) independently determined bleeding rates.

Conclusion: As in functional MR, degenerative MR can be dynamic and increases during exercise in >50% of patients. Changes in MR severity are associated with exercise-induced changes in systolic PAP, suggesting a potential impact on outcome. Further studies are needed to determine whether exercise-induced increase in MR has prognostic importance.

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A risk score for predicting outcome in asymptomatic aortic stenosis

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Background: The management of patients with asymptomatic severe aortic stenosis remains controversial. We sought to develop a continuous risk score for predicting the mid-term development of symptoms or adverse events in this setting.

Methods and Results: We prospectively followed 107 patients with asymptomatic aortic stenosis (aged 72 years [63–77]; 35 women; aortic-jet velocity, 4.1 m/s [3.5–4.4]) at a single center in France. Predefined endpoints for assessing outcome were the occurrence within 24 months of death or aortic valve replacement necessitated by symptoms or by a positive exercise test. Variables independently associated with outcome were used to build a score that was validated in an independent cohort of 107 patients from Belgium. Independent predictors of outcome were female gender, peak aortic jet velocity and B-Type Natriuretic Peptide (BNP) at baseline. Accordingly, the score could be calculated as: Score = [Peak velocity (m/s) x 2] + [natural logarithm of BNP x 1.5] (if female gender). Event-free survival after 20 months was 80% for patients within the first Score quartile, as compared to only 7% for the fourth quartile (Figure). Areas under the ROC curve for the score were 0.90 and 0.89 in the development and validation cohorts respectively.

Conclusions: If further validation is achieved, this score may be useful to predict outcome in individual patients with asymptomatic aortic stenosis in order to select those who might benefit from early surgery.

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Is Global Left Ventricular Afterload has an Impact on Left Atrial Function in Patients with Aortic Stenosis?

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Introduction: In aortic stenosis (AS), global left ventricular (LV) afterload is evaluated using valvulo-arterial impedance (Zva) and has been recently