aortic stenosis. The aim of this study was to assess the associations between BNP level and disease progression in aortic stenosis.

Methods: Thirty-seven patients (20 male, aged 71.8 ± 4.8 years) with isolated aortic stenosis underwent independent assessment of symptoms, transthoracic echocardiography and measurement of plasma levels of BNP. Results: Mean pressure gradient was 63.2 ± 24 mmHg and mean left ventricular area was 0.67 ± 0.15 cm². Patient's age was 74 ± 13 years, 13 patients as moderate AS (PG mean 30 ± 5 mmHg), and 15 patients as severe AS (PG mean 45 ± 5 mmHg). At the study entry, plasma BNP levels were significantly higher in symptomatic patients than in asymptomatic patients (BNP 352.3 ± 529 vs 53.2 ± 43.2 pg/ml, P < 0.05). BNP levels increased with NYHA class (BNP 26 ± 19 class II, 93 ± 15 class III, 721 ± 605 class IV). Significant linear correlation BNP levels between transverse pressure gradients, fractional shortening-velocity ratio (FSVR) and ejection fraction-velocity ratio (EFVR) as severity index of AS in echocardiography (r = 0.57, P < 0.5 and r = 0.53, P < 0.05). BNP was positively correlated with LV mass index (r = 0.40, P < 0.05) but no correlation was found between BNP and LVEF at rest state.

Conclusions: Plasma BNP levels are elevated in symptomatic patients with aortic stenosis even though their LV systolic dysfunction was not overt at rest. Furthermore, BNP is closely related to echocardiographic indices reflecting severity of aortic stenosis. This study suggests that measurement of BNP may complement clinical and echocardiographic assessment of aortic stenosis, and could potentially be used to monitor progression of disease non-invasively. These markers may also be useful to identify the optimum time for surgery in AS.

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The effect of aortic valve replacement on left ventricular deformation properties in patients with severe aortic stenosis. Ultrasound strain analysis

T. Kukulski1, B. Dziobek1, W. Streb1, M. Zembala2, Z. Kalarus1, 1St John's Institute for Cardiovascular Research, London, United Kingdom; 2Silesian Center for Heart Diseases, Dept. of Cardiology, Zabrze, Poland; 3Silesian Center for Cardiovascular Surgery, Transplantology. Dept, Zabrze, Poland.

Objective: Chronic pressure overload, myocardial hypertrophy and fibrosis during the course of aortic stenosis have an impact on regional myocardial function by changing its deformation properties. Strain imaging based on the Tissue Doppler data is currently the only bedside technique that can quantitate regional deformation.

The aim of this study was to evaluate the changes in regional left ventricular (LV) function post aortic valve replacement (AVR).

Methods: 90 consecutive pts (20 M, age 57 ± 13 y) with aortic stenosis who underwent AVR were analysed prospectively before and at 49 (15) days post AVR. Patients with concomitant CABG were excluded from the analysis. According to preoperative LV performance pts were divided into gr. 1 (EF 57-8%, EDV 183 ± 27 ml, ESV 128 ± 20 ml, max GR 74 ± 18 mmHg, AVA 0.94 ± 0.14 cm²). Tissue Doppler data were acquired at high frame rate for regional deformation analysis. Before AVR post AVR P before AVR post AVR P

Conclusions: Reduced LV mass index (35 ± 20 vs 25 ± 10 g/m², P < 0.0007) and LV mass (117 ± 10 mmHg; P < 0.0001). In contrast to deformation, AMS development was calculated by radial peak systolic strain-rate (SR) and strain (S). The two groups were compared using a Mann–Whitney U test.

Results: In asymptomatic patients, deformation parameters were reduced (SR: 3.1 ± 1.2 vs 5.1 ± 1.5; p < 0.01 and S: 26 ± 15 vs 36 ± 17; p < 0.05). AMS was increased (428 ± 110 vs 247 ± 88 g/m²; p < 0.01) and LVM was highly increased (189 ± 37 vs 117 ± 10 mmHg; p < 0.0001), indicating that deformation, AMS development is typically prolonged during systole (Fig. 1) and peak AMS is increased (10.6 ± 1.5 vs 8.1 ± 0.5 kPa; p < 0.05).

Conclusions: Left ventricles facing an aortic valve stenosis can compensate functionally at rest by increasing and prolonging their AMS development.

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Increased and prolonged active myocardial stress as compensation in aortic stenosis

P. Claus1, F. Vlaemynck2, I. Decramer1, M. Maalughlin3, E.E. Rademakers1, L. Mertens2, J. Strotmann2, B. Bijnsma3, 1Catholic University Leuven, Department of Cardiology, Leuven, Belgium; 2University Hospital Wurzburg, Cardiology, Wurzburg, Germany; 3University Hospitals Castricum, Pediatric Cardiology, Leuven, Belgium

Background: To assess a true reduction in myocardial function in the presence of a prolonged afterload increase, deformation parameters may not be sufficient and measuring myocardial forces might add information. Recently, we developed a method to estimate the active myocardial stress (AMS) using a mechanical model of the left ventricle (LV).

Conclusions: Exercise capacity during a 6 minute walk is related better to left ventricular diastolic and long axis systolic function than to global systolic function both before and after aortic valve replacement.

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Rate of progression of aortic valve stenosis in patients with severe coronary artery disease

P. Faia1, M.L. Andréda1, M. Canada1, R. Ribeirais1, S. Lima1, C. Alves2, R. Gouveia1, R. Seabra-Gomes1, 1Hospital de Santa Cruz, Cardiology Department, Lisbon, Portugal; 2Hospital Central do Funchal. Departamento de Estatistica, Funchal, Portugal

Background: Coronary Artery Disease and Aortic Valve Stenosis (AVS) commonly coexist in the same patient (Pts). In this Pts, when CABG surgery is indicated the decision if and when to simultaneously perform aortic valve replacement (AVR) is not clear-cut. Although predictors of progression of AVS have been identified mainly the coexistence of CAD, high variability of progression remains in the individual Pt.

Objective: To evaluate the rate of progression of AVS in Pts with severe CAD.

Eur J Echocardiography Abstracts Supplement, December 2005