and F for suspected PVT (n=71) or biopsy atrial fibrillation (n=49). Both TTE and TEE were focused on measurements of prolapse opening (OA) and closing angles (CA) and results were compared to those obtained with F. Concordance was evaluated by Bland-Altman test (Table). In midesophageal OA were correctly calculated by TEE and TEE in 85% and 100% of pts, respectively, regardless of prosthesis type, with a fairly good concordance with F. In aortic prostheses, OA was correctly calculated by TEE and TEE in 40% and 77% of single (SD) and only in 13% and 35% of bileaflet (BL) prostheses.

Conclusions: Quantitative evaluation of prostheses LM by TEE and TEE is feasible and effective in almost all pts with mitral prostheses. Evaluation of aortic prostheses still represents the "dark side" of echocardiography allowing a correct quantitative evaluation only in a minority of pts, especially those with BL valves.

**VALVE DISEASE – CHOICE BEFORE AND AFTER INTERVENTION**

### 521

**Prognostic value of preoperative echocardiographic parameters in left ventricular function recovery after surgical treatment of mitral insufficiency**

Y. Iavini 1, O. Kuzii 2, N. Orlychchyn 2. Liviu, Ukraine; Liviu, Ukraine

**Background:** The late result of mitral valve surgery depends on the reversibility of left ventricular (LV) function. There is a practical need in reliable preoperative indices which could predict the possibility of irreversible myocardial changes developed during surgery. The aim of the study was to evaluate preoperatively, postoperatively and yearly for 6-8 years, aortic prostheses.

**Methods:** Echocardiographic examination of 52 patients (age from 23 to 73 years, mean 46.9 ± 5.5) with asymptomatic LM (NYHA class <2) and normal preoperative LV function (EF > 50%) has been performed before surgery; after 5-9 days and 3-8 months using Acuson 128XP equipment. TDI was performed from the apical four chamber view with a sample volume placed at the level of the mitral annular insertion to calculate the TDI systolic and diastolic parameters.

**Results:** At the early examination after surgery all patients showed the LV EF decreasing from 62.2 ± 7.3% to 49.2 ± 6.2% (p < 0.001), and at the late period the most of them showed the gradual improvement of this parameter to 54 ± 5.1% (p < 0.01). In 16 patients LV EF remained less than 50%. This group was characterized by the absence of the LV end-diastolic and end-systolic diameter (EDD) reduction in early postoperative period. No difference of LV echocardiographic parameters measured before surgery (LV EDD and EF) was revealed between this group and group of patients with normal late LV function. The only preoperative predictor of the late LV dysfunction was the Sm value which was significantly lower preoperatively (9.4 ± 1.5 cm/s) than in patients with normal late LV function (14 ± 1.2 cm/s; p < 0.01). Preoperative Sm value correlates with an extent of LV EDD reduction in early postoperative period (r = 0.52) and with LV EF in late period (r = 0.64).

**Conclusion:** Mitral annular systolic velocity decreasing reflects the latent and potentially irreversible changes in LV myocardium and could be used as a predictor of postoperative LV dysfunction in patients with severe asymptomatic MR.

### 522

**Assessment of tricuspid annular motion using tissue Doppler imaging before and after mitral valve replacement surgery**

H. Awadalla, R. Mawardi, A. Ahmed, K. Darahim. Ain Shams University Medical School, Department of Cardiovascular Medicine, Cairo, Egypt

**Background:** Assessment of Right Ventricular (RV) function after Percutaneous Balloon Mitral Valve Replacement (PBMV) has been previously investigated. This study aims at assessing the utility of Pulsed Tissue Doppler Imaging (pTDI) of tricuspid annular motion in the evaluation of RV systolic function after PBMV in patients with severe rheumatic mitral stenosis, and whether improvement in pTDI parameters bears any correlation with a decline in the Right Ventricular Systolic Pressure (RVSP) after PBMV in such patients.

**Patients and Methods:** 30 patients with severe rheumatic mitral stenosis (Mitrval Valve Area < 1 cm²) and sinus rhythm on EKG were enrolled. A transthoracic echocardiographic study was performed on all patients to exclude contraindications to PBMV (left atrial appendage thrombus, left atrial thrombus, high Wilkins score). Pulsed Doppler Tissue Imaging (pTDI) assessment of tricuspid annular motion before and after PBMV was performed. Guided by a 2D Apical four chamber view, a sample volume with a fixed length of 0.5 cm was placed on the tricuspid annulus at the place of attachment of the anteriors leaflet of the tricuspid valve. The ultrasound beam was adjusted as to be parallel to the direction of the tricuspid annulus motion. Peak Systolic (Sa), Peak Early Diastolic (Ea) and Late Diastolic (Aa) annular velocities were recorded. pTDI measurements were acquired over five consecutive cardiac cycles, and mean values were calculated.

**Results:** Peak Systolic Tricuspid Annular Velocity (Sa) increased from 13.1 ± 2.3 cm/sec before PBMV to 13.4 ± 2.1 cm/sec after PBMV (p < 0.001). The improvement was significant in all patients except those with PBMV < 24 hours after PBMV (p = 0.001). Peak Diastolic Late Diastolic Annular Velocity (Aa) increased, though insignificantly, after PBMV (14.8 ± 5.8 cm/sec before PBMV to 14.6 ± 4.2 cm/sec after PBMV; p = 0.08). Changes in either Early or Late Diastolic Tricuspid Annular Velocity (EA and Aa) did not bear any significant correlation to improvement in the RVSP or the MVA.

**Conclusion:** Improvement in Peak Systolic Tricuspid Annular Velocity (Sa), as measured by pTDI, accurately predicts improvement in RV systolic function and decline of RV systolic pressure following PBMV. Peak Systolic Tricuspid Annular Velocity (Sa) did not however correlate to improvement in the MVA.

### 523

**Mitral valve repair or with or without ring insertion in patients with non-ischemic mitral regurgitation and preoperatively depressed left ventricular function. A Doppler echocardiography study**

N. Kouris 1, D. Kontogianni 2, I. Bononos 2, E. Kallandak 2, H, Grassos 2, G. Goranokton 2, D. Babali 2, P. N均由oyanopoulos 1. Athens, Greece; 2Thessaloniki General Hospital, Cardiology dept, Aristotle University Hospital, Imperial College, Cardiology dept, London, United Kingdom

**Aim:** Mitral valve repair during mitral valve repair (MVR) is controversial, since it improves the results of MVR, but at the cost of more frequent surgical anterior motion. The purpose of our study was to assess if ring insertion affects postoperative left ventricular (UV) recovery in patients (pts) with preoperatively depressed LV function.

**Patients and Methods:** 27 pts (19 men – 8 women, aged 62-70 years) underwent MVR due to myxomatous mitral valve (16 pts) and ruptured chordae tendineae (11 pts). In 16 pts a rigid Carpentier annular ring was inserted (Group A), based on the surgeon’s decision, while no ring was implanted in 11 pts (Group B). All the pts were followed up for at least 5-9 days and 3-8 months using Acuson 128XP equipment. TDI was performed from the apical four chamber view with a sample volume placed at the level of the mitral annular insertion to calculate the TDI systolic and diastolic parameters.

**Results:** The 2 groups had similar age, preoperative mitral regurgitation, affected leaflets and preoperative values of LV function. Group A showed a significant decrease in EF postsurgery compared to Group B (p < 0.04), while the other indices did not change significantly. During FU, this difference was diminished and at the end of the FU period no significant difference was found in any indices (Table 1). Group A demonstrated slightly higher UVSD velocities postoperatively and during FU (90.8 ± 2 cm/sec vs 105.1±6.1 cm/sec, p < 0.05).

**Conclusion:** MVR in non-ischemic mitral regurgitation and preoperatively depressed LV function preserves LV contractility, independently of a rigid annular ring insertion, which does not cause any significant LVOT obstruction, but also does not favorably affect LV function postoperatively.

### 524

**Non-rheumatic aortic stenosis: does mitral regurgitation improve with isolated aortic valve replacement?**

F. Antonini Canteri 1, D. Risemberg 1, G. Nocciola 1, A. Pascolotto 1, N. Pezzutto 1, R. Pizzaro 2, B. Zingone 2, G.L. Nicolaou 2. 1Azienda OspedalieraBUFFALO ‘S. Maria degli Angeli’, Cardiology, Pordenone, Italy; 2U.O. Cardiochirurgia, Trieste, Italy

**Background:** The surgical treatment of mitral valve regurgitation (MR) at the time of aortic valve replacement (AVR) in patients with aortic stenosis (AS) remains controversial. The purpose of this study was to evaluate the change in severity of MR following isolated AVR and to investigate the presence of possible determinants of improvement of MR.

**Methods:** The study cohort includes 109 patients (mean age 72±6 years, 53 males) with concomitant non-rheumatic AS and MR, who underwent isolated AVR between 1993 and 2004 (90 biological, 19 mechanical prostheses). Follow-up transthoracic echocardiography was available on all cases, with a median of 44±5 months.

**Results:** Preoperative MR was mild (+1±3) in 65 patients (60%), moderate (±2±3) in 30 (27%), severe (±3±3) in 14 (13%). At follow-up echocardiography, MR improved in 30 patients (27%), remained unchanged in 66 (61%) and worsened in 13 (12%). Of patients with preoperative ±3±3 MR, 7 (50%) improved by 1 or 2 grades, 7 (50%) remained unchanged. Of those with preoperative ±3±3 MR 14 (47%) exhibited improvement, 15 (50%) remained unchanged, 1 (3%) worsened. In the group of 44 patients with preoperative ±2±3±3 MR, no significant predictive factors of MR improvement were found: age, sex, ejection fraction, history of hypertension, sinus rhythm, associated coronary artery disease, combined coronary artery bypass surgery, prosthesis size, left atrial dimensions, left ventricular mass, left atrial fibrillation, aortic valve area, mean gradient, pulmonary artery pressure (p=m).

**Conclusions:** MR does not always improve after isolated AVR. Although many
patients with preoperative 2+ or 3+ MR showed improvement, about 50% remained unchanged. The improvement is substantially unpredictable in the individual patient. Severe MR should be repaired or replaced at the time of AVR; further studies are needed to establish the best strategy in patients with moderate-to-severe preoperative MR.

526 Early clinical and echocardiographic course and long-term outcome in patients with severe destructive infective endocarditis

M.B. Hlawaty 1, W. Tracz 2, M. Osofska 2, M. Koskiwcz 2, P. Podolec 2, A. Sobota 3, J. Stadnik 3, A. Distelkiewicz 3, 1Krakow, Poland; 2Institute of Cardiology Dept. of Cardiac and Vascular Disease, Krakow, Poland; 3Institute of Cardiology, Cardiac and Vascular Surgery, Krakow, Poland

Background: Infective endocarditis (IE) carries a high risk of mortality and morbidity, and is a diagnostic challenge. Rapid diagnosis and effective treatment are essential to good patient outcome.

The aim of this retrospective study was to review our long-term experience with severe destructive IE and heart failure cases and the role of echocardiography (TTE, TEE, and color Doppler imaging) in this setting.

Methods: Over the period spanning 1985 - 2004, 151 patients (mean age 44±12.7 years) were identified with severe destructive IE and heart failure (native valve IE: 104; prosthetic valve IE: 47; and homograft IE: 10). Clinical factors were used to diagnose IE in compliance with the Duke criteria, and the resulting diagnostic probabilities were correlated with echocardiographic (TEE, TEE) findings.

Results: Severe valvular or prosthetic valve regurgitation was diagnosed in 88 patients, while 38 patients had left ventricular (LV) complications in 7 patients, aortitis in the sinus of Valsalva in 9 patients. Vegetations were detected in 69 patients and 25% of them suffered from septic embolism. The most of our patients were in NYHA functional classes IV (115) and 36 pts in NYHA class III. The causative bacteria and fungi were isolated from blood culture in 63% of cases. The main indications for surgery were: large and mobile vegetations, progressive cardiac failure, uncontrollable sepsis, perivalvular abscess or fistula, cusps rupture, prothoratic valve dysfunctions, and systemic emboli. Forty six patients underwent homograft aortic valve replacement and 105 pts arterial valve replacement. The in-hospital mortality was 8.2%. Twelve patients required re-operation due to recurrent IE, which was echocardiographically confirmed; out of which 5 were reoperated twice with good long-term results. Survival was 89% and 76% at 5 years and 10 years respectively. The remaining patients were in NYHA class I - II and presented normal function of implanted valves.

Conclusions: Echocardiography may reasonably be regarded as the method of choice for noninvasive detection of valvular and perivalvular complications in patients with severe destructive IE, as it stands for an accurate and early diagnosis. Homograft aortic valve replacement is an effective method of managing destructive aortic valve IE.

526 Aortic valve sclerosis: a clinically useful marker in advanced coronary artery disease?

B. Obrenovic-Kircanski 1, D. Trifunov-Zamirlak 1, G. Krijana 1, D. Panic 1, M. M: 2, A.D. Sjoeick 1, P. Djaksa 1, 1Clinical Center of Serbia, Institute for Cardiovascular Disease, Belgrade, Serbia and Montenegro; 2University Info for Cardiovasc. Dis., Inst. Klinicki Centar Srbije, Belgrade, Serbia and Montenegro

Background and aim: Aortic valve sclerosis (AVS) is considered a manifestation of generalised atherosclerosis involving aortic valve. It has been associated with higher cardiovascular mortality and morbidity in population-based study and preclinical coronary artery disease (CAD). However, the importance of AVS in patients with significant coronary artery disease (CAD) was not evaluated.

Methods: We investigated the prevalence and significance of AVS in 106 consecutive patients (mean age 59.28±8.46 yrs; male 75.5%) with significant CAD assessed by transthoracic echocardiography (TTE) and defined as the presence of generalized thickening or localized echogenic spots on one or more aortic cusps or aortic annulus. Patients also undergone carotid duplex scans. Following variables were analyzed: age, gender, body mass index (BMI), presence of hypertension, diabetes, smoking, cholesterol and triglycerides and echocardiography measures obtained by classical TTE.

Results: Severity of carotid artery disease regarding the presence of AVS. AVS were significantly more frequent in patients with multi-vessel disease AVS were significantly more frequent in patients with 3 vessel diseases compared to patients with 2 vessel disease (49% vs. 26%, p=0.01; 95% confidence interval 1.4, 6.86). There was no difference in the degree of carotid artery disease regarding the presence of AVS.

Conclusion: Among patients with severe CAD referred to AGB or PCI, AVS was prevalent and associated with a prothromogenic clinical profile and increased left ventricular systolic size, enlarged right ventricle, frequent mid-wall calcifications and extended CAD. Therefore AVS might be useful clinical marker in these patients.

527 Mitral annular calcification in patients referred to myocardial revascularization

D. Trifunovic-Zamirlak 1, B. Obrenovic-Kircanski 1, G. Krijana 1, M. Milic 2, D. Panic 1, A.D. Sjoeick 1, P. Djaksa 1, 1University Info for Cardiovasc. Dis., Inst. Klinicki Centar Srbije, Belgrade, Serbia and Montenegro; 2Clinical center of Serbia, Institute for Cardiovascular Disease, Belgrade, Serbia and Montenegro

Background and aim: Mitral annular calcification (MAC) may represent a manifestation of generalized atherosclerosis. The aim of this study was to investigate whether presence of MAC is associated with the higher degree of coronary atherosclerosis in patients(pts) with advanced coronary artery disease (CAD) as it stands for an accurate and early diagnosis. We performed pro- and post-operatory clinical and echocardiographic evaluation. The media follow up was 10 months. The parameters assessed were: NYHA class, EURO score, survival curve, EF, MR (vena contracta, jet area, jet area/left atrium area, PISA radius, CW Doppler density), left ventricular end-diastolic volume (EDV), mitral valve-coaptation depth, mitral annulus size, pulmonary artery systolic pressure and left atrial size.

Results: There was significant improvement of EF comparing the preoperative left ventricle to postoperative data (A group 57,8 vs 38,2; p<0.05), but there was no significant postoperative EF difference between the two groups (p>0.05). MR in postoperative follow up was only of mild degree (2+4) without any significant difference between the two groups. We observed a significant reduction of post-operative EDVI in the two groups (A group 121,5 vs 110,2±m; p<0.05). We observed a difference of mortality between two groups (A group 26.6%, B group 13.04%). Log Rank Test between the two groups was statistically significant (chi2=6,14, p=0.014).

Conclusion: Surgical mitral valve repair in functional MR in pts with severe EF reduction improves NYHA class (A group 3, 4 vs 1, 81; B group 3, 1 vs 1, 1), LV systolic function and determines a LV reverse remodeling. The small number of pts in Bgroup could explain the non significant difference of survival between the two groups, anyway we observed an improved trend of midterm survival in B group probably because of the absence of cardiovascular risks. Moreover the effective early mortality was lower than the expected one calculated by EURO score (A group 10,87 vs 14,33, B group 4,36 vs 6,92).