

## 174

**Is Left Ventricular Longitudinal Function a Determinant of Plasma Brain Natriuretic Peptide during Exercise in Patients with Organic Mitral Regurgitation?**

Julien Magne, Marie Moonen, Kim O'Connor, Luc A. Piérard, Patrizio Lancellotti  
 CHU Sart Tilman, Cardiologie, Liège, Belgique

**Introduction:** Plasma brain natriuretic peptide (BNP) may be used for risk stratification in patients with organic mitral regurgitation (OMR). Whether exercise can induce changes in BNP in patients with OMR has never been investigated.

**Method and results:** Resting and exercise transthoracic echocardiography including Doppler, tissue Doppler imaging (TDI) and 2-D speckle-tracking (2DSt) quantification were performed in 56 consecutive patients (61±15 yrs, 54% of male) with moderate to severe OMR. Peak velocity and time-to-peak velocity (TP) were measured using TDI for Ea-, Aa- and Sa-wave. 2DSt was used to evaluate global LV longitudinal strain (GLS). Blood samples were drawn at rest and 5 min after peak exercise to measure plasma BNP level. BNP increases during exercise (from 27±18 to 35±24pg/ml,  $p<0.001$ ) and peak exercise BNP was correlated to exercise LV ejection fraction (EF) ( $r=-0.36$ ,  $p=0.007$ ) and to exercise Sa velocity ( $r=-0.41$ ,  $p<0.001$ ), TP-Sa ( $r=0.32$ ,  $p=0.02$ ) and TP-Ea ( $r=0.39$ ,  $p=0.004$ ). The best correlation with peak BNP was found with peak GLS ( $r=-0.58$ ,  $p<0.0001$ ). In addition, there were significant associations between the changes in BNP and the changes in LVEF ( $r=-0.35$ ,  $p=0.009$ ), Sa velocity ( $r=-0.37$ ,  $p=0.005$ ), TP-Ea ( $r=0.35$ ,  $p=0.01$ ), and GLS ( $r=-0.44$ ,  $p=0.0001$ ). On multivariate analysis, after adjustment for age, sex and LVEF, only peak GLS and TP-Ea were independently associated with peak BNP ( $r^2=0.34$ ,  $p<0.0001$  and  $r^2=0.11$ ,  $p=0.003$ , respectively). Furthermore, only changes in Sa velocity ( $r^2=0.23$ ,  $p=0.0004$ ) and in GLS ( $r^2=0.17$ ,  $p=0.03$ ) were independently associated, after adjustment, with the changes in BNP.

**Conclusion:** Exercise and exercise-induced changes in LV longitudinal function are the major determinants of both exercise and changes in BNP during exercise, in patients with OMR. These results suggest that LV longitudinal function should be systematically quantified during stress echocardiography to detect latent subclinical LV dysfunction.

## 175

**Changes in Systolic Pulmonary Arterial Pressure during Exercise are Related to Changes in Mitral Regurgitation**

Julien Magne, Marie Moonen, Kim O'Connor, Luc A. Piérard, Patrizio Lancellotti  
 CHU Sart Tilman, Cardiologie, Liège, Belgique

**Introduction:** Current guidelines recommend mitral surgery for asymptomatic patients with severe organic mitral regurgitation (OMR) and preserved LV systolic function when exercise pulmonary hypertension (PHT) is present. However, the determinants of exercise-induced PHT in such patients have not been evaluated.

**Method and results:** Resting and exercise transthoracic echocardiography were performed in 66 consecutive patients (61±15 years, 55% of male) with significant OMR. MR severity evaluated using effective regurgitant orifice (ERO) area. Systolic pulmonary arterial pressure (PAP) was derived from tricuspid regurgitation peak velocity and exercise PHT was defined as tricuspid pressure gradient  $\geq 50$ mmHg. Compared to patients with exercise PAP  $< 50$ mmHg, those with exercise PHT ( $n=28$ , 42%) were significantly older. There was no significant difference between the 2 groups with regard to resting and exercise LV functions and to resting ERO. Nonetheless, patients with exercise PHT had higher exercise ERO ( $50\pm 22$  vs.  $38\pm 14$ mm<sup>2</sup>,  $p=0.03$ ). The changes in ERO during exercise were significantly higher in patients with PHT ( $8\pm 12$  vs.  $-2\pm 12$ mm<sup>2</sup>,  $p=0.004$ ). Regarding to peak exercise PAP, the best correlations were found with age ( $r=0.39$ ,  $p=0.007$ ) and exercise ERO ( $r=0.47$ ,  $p=0.0009$ ). Moreover, changes in PAP during exercise were only correlated with the changes in ERO ( $r=0.50$ ,  $p=0.0012$ ). On multivariate analysis, after adjustment for age, sex and resting PAP, exercise-induced changes in ERO were independently associated with the changes in PAP (ERO:  $\beta=0.4$ ,  $p=0.002$ ). In addition, changes in MR severity were also independent predictors of exercise PHT (ERO: odds-ratio (OR) = 1.2, 95%CI: 1.1-1.4,  $p=0.0008$ ).

**Conclusion:** Exercise PHT is frequent in patients with OMR. Changes in MR severity during exercise are the main determinants of exercise-induced changes in systolic PAP. Further studies are needed to evaluate whether changes in MR severity during exercise may have a prognostic impact in patients with OMR.

## 176

**Infective endocarditis and bicuspid aortic valve: characteristics and 1 year outcome**

Claire Sorel (1), Thomas Goissen (2), Gilbert Habib (3), Franck Thuny (3), Dan Rusinaru (1), Christophe Tribouilloy (1)  
 (1) CHU Amiens, Cardiologie B, Amiens, France – (2) centre cardiologique du nord, Saint Denis, France – (3) hopital de la timone, cardiologie, Marseille, France

**Background:** Bicuspid aortic valve is a common malformation which may be complicated by infective endocarditis (IE). Nevertheless, profile and outcome of infective endocarditis on bicuspid aortic valve is undefined.

**Objectives:** To determine clinical and paraclinical characteristics of infective endocarditis on bicuspid aortic valve, and its outcome at 1 year.

**Methods:** Bicentric cohort study of 310 IE involved native aortic valves, presenting to Amiens's and Marseille's Hospitals from January 1991 through May 2007.

**Results:** Bicuspid aortic valve were found in 50 patients (16.2%), mean age  $45\pm 16$  years ( $p=0.0001$ ), sex ratio 5.25/1. Charlson's comorbidity index was lower in bicuspid valve ( $1.64\pm 2.56$  vs.  $2.78\pm 2.43$ ;  $p=0.003$ ). Abscesses were detected in 50% of cases of bicuspid valve vs 19.7% on tricuspid aortic valve ( $p=0.0001$ ). Previous antibiotic therapy before diagnosis was more frequent in bicuspid IE (30.4 vs 13.7%,  $p=0.005$ ), as well as negative blood cultures (24 vs 10%,  $p=0.006$ ). Digestive organisms were significantly less isolated in bicuspid valve. Rate of embolic events was not different.

In bicuspid valve IE, surgery was performed in 72% of cases. Peri-operative mortality was 11.1%. Staphylococcus aureus infection was the only independent predictor of peri-operative mortality (HR 34.9; IC95% 1.5-76.8;  $p=0.024$ ). Uncontrolled infection was the independent predictor of 1 year mortality (HR 20.55; IC95% 1.5-268;  $p=0.021$ ). One year survival of bicuspid valve endocarditis tended to be better compared with that of tricuspid aortic valve (87% vs 77%,  $p=0.14$ ), but this trend was corrected by age-match (HR 0.656; IC95% 0.38-2.35;  $p=0.33$ ).

**Conclusions:** Endocarditis of bicuspid aortic valve is frequent in native aortic valve IE, is associated with a younger age, with more annular aortic abscesses, and more use of previous antibiotic therapy before diagnosis. One-year prognosis seems to be no different from tricuspid aortic valve after age-adjustment

## 177

**Does transcatheter aortic valve implantation induce myocardial injury?**

Karim Bejar (1), Christophe Tron (1), H el ene Eltchaninoff (1), Pierre-Yves Litzler (2), Matthieu Godin (1), Bruno Cauliez (3), Carlos Sanchez-Giron (1), Alain Cribier (1)  
 (1) CHU de Rouen, Cardiologie, Rouen, France – (2) CHU de Rouen, Chirurgie cardiaque, Rouen, France – (3) CHU de Rouen, Biochimie, Rouen, France

Increased cardiac troponin is observed after valvular surgery, indicating perioperative myocardial injury, although the clinical significance of this elevation remains controversial. The current study was designed to evaluate the frequency of troponin elevation and the degree of myocardial injury after transcatheter aortic valve replacement (TAVR), a new procedure for the treatment of high surgical risk patients (pts) with degenerative aortic stenosis (AS).

**Methods:** 51 consecutive pts ( $84\pm 6$  years old) with severe symptomatic AS and a high surgical risk for valve replacement had retrograde TAVR using the Edwards-Sapien balloon expandable heart valve. 27% of pts had previous cor-