ABSTRACTS OF THE 19TH CONGRESS OF ECHOCARDIOGRAPHY

Poster session: Valvular heart disease

Functional mitral regurgitation as a determinant of pulmonary hypertension in heart failure with preserved left ventricular ejection fraction


GHICL, faculté libre de médecine de Lille, Lille, France
C CHRU de Lille, Lille, France
Tulane Medical School of Medicine, New Orleans, United States
Quebec Heart and Lung Institute, Laval, Canada

Objectives. -- Functional MR may occur in heart failure with preserved ejection fraction (HFpEF) as elevated left atrial pressure disrupts normal functioning of the mitral valve apparatus. Whether functional MR contributes to pulmonary hypertension (PH) in HFpEF remains unknown.

Material and methods. -- Systolic pulmonary artery pressure (sPAP) was assessed using Doppler echocardiography in 70 ambulatory HFpEF patients and 70 hypertensive controls without organic lesions of the mitral valve.

Results. -- sPAP and E/e' were greater in HFpEF patients than in controls (29 ± 8 vs 35 ± 9, P < 0.0001 and 11 ± 5 vs 13 ± 6, P = 0.018 respectively). While none of controls had more than trivial MR, 19 patients with HFpEF had mild to moderate MR (mean mitral ERO, RV and regurgitant fraction 7 ± 3 mm², 15 ± 6 mm², and 28 ± 14% respectively). After adjusting for E/e', sPAP remained greater in HFpEF patients than in controls (P = 0.002). Pulmonary hypertension was significantly more prevalent in HFpEF patients with functional MR than in HFpEF patients without functional MR (62 vs 22%, P = 0.002). Functional MR remained an independent predictor of PH in HFpEF patients (P = 0.004) after adjustment on E/e' ratio (P = 0.022) and LA volume index (P = 0.025).

Conclusion. -- Besides severity of LV diastolic dysfunction, functional MR appears as a key determinant of pulmonary hypertension in HFpEF.

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Determinants of plasma B-type natriuretic peptide levels in patients with aortic valve stenosis and normal left ventricular ejection fraction


GHICL, faculté libre de médecine de Lille, Lille, France
C CHRU de Lille, Lille, France
Quebec Heart and Lung Institute, Quebec, Canada

Background. -- Several studies suggest that BNP testing may help define the timing of aortic valve surgery in patients with aortic valve stenosis (AVS) prior onset of overt LV systolic dysfunction. The aim of this study was to identify predictors of plasma BNP levels in a large cohort of patients with AVS and preserved LV ejection fraction.

Method and results. -- One hundred and thirty-five consecutive patients were prospectively included in the present study (mean age 73 ± 13-year-old, 66 [49%] male, 89 [66%]) with severe aortic valve stenosis (aortic valve area < 0.6 cm²/m² BSA). Plasma BNP levels, clinical and comprehensive Doppler echocardiography evaluation was performed in all patients. Independent clinical predictors of plasma BNP levels (R² = 0.19) were older age (P < 0.0001) and presence of AVS symptoms (P = 0.004). Independent echocardiographic predictors of plasma BNP levels (R² = 0.38) were E/e' ratio (P = 0.01), LV mass index (P = 0.018), left atrial surface (P < 0.0001) and systolic pulmonary artery pressure (sPAP) (P = 0.004). Overall, independent predictors of plasma BNP levels (R² = 0.47) were older age (P = 0.001), known coronary artery disease (P = 0.047), increased LV mass index (P = 0.001), left atrial enlargement (P = 0.002), and increased sPAP (P = 0.003).

Conclusions. -- In patients with AVS and normal LV ejection fraction, plasma BNP predominantly reflects the clinical and echocardiographic consequences of afterload burden imposed on the left ventricle rather than the severity of valve stenosis, per se. This may account for the strong prognostic value of BNP beyond indices of valvular stenosis severity in patients with AVS.

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Towards a noninvasive assessment of valve biology: Echocardiographic measures of mitral leaflet distensibility


Massachusetts General Hospital, Boston, United States
Hôpital européen Georges-Pompidou, Paris, France
Johns Hopkins University, Baltimore, United States

Background. -- Changes in mitral valve (MV) elasticity or distensibility occur in disease and directly affect MV function, contributing to MV prolapse (MVP) or flail versus restricted coaptation of stiffer leaflets in functional mitral regurgitation (FMR) and MV stenosis (MS). Recent studies suggest MV distensibility may be modified to reduce MR, but distensibility has only been measured in excised MVs. Our aim was to test the feasibility of obtaining a noninvasive measure of MV distensibility in patients by measuring systolic change in anterior leaflet length (ALL) or anterior leaflet strain; and to test