Valvular Heart Disease

PROGNOSTIC VALUE OF PLASMA BRAIN NATRIURETIC PEPTIDE LEVELS RESPONSE DURING EXERCISE IN ASYMPTOMATIC PATIENTS WITH AORTIC STENOSIS

Poster Contributions
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Background: Exercise stress echocardiography is useful in the management and risk stratification of asymptomatic aortic stenosis (AS) patients. Resting brain natriuretic peptides (BNP) level is associated with increased risk of adverse events in AS patients. The incremental prognostic value of BNP response during exercise is unknown. We aimed to identify the determinants of peak-exercise BNP level and to evaluate its prognostic value in asymptomatic patients with AS.

Methods: Resting and exercise Doppler-echocardiographic data and BNP levels were prospectively collected in 211 asymptomatic AS patients in 2 centers.

Results: BNP level increased significantly from rest to exercise (65±86 vs. 91±111 pg/mL, p<0.0001). The independent determinants of peak-exercise BNP were systemic arterial compliance (p=0.004), resting mean gradient (MG: p=0.04), and change (Δ) in stroke volume index (SVi) during exercise (p=0.02). During a mean follow-up of 1.8±1.3 years, 97 patients underwent AVR motivated by development of symptoms or LV dysfunction and 7 patients died. Increased peak-exercise BNP level was associated with higher occurrence of adverse events (2-yrs event-free survival according to tertiles of peak-exercise BNP: T1: 84±5% vs. T2: 60±7% vs. T3: 29±6%, p<0.0001) and MG was slightly higher in T2 and T3 compared to T1 (43±15 and 43±16 vs. 37±13mmHg; p=0.03). In multivariable analysis, after adjustment for age, gender, hypertension, MG, and valvulo-arterial impedance, T2 (HR=2.3; 95%CI: 1.3-4.3; p=0.005) and T3 (HR=5.3; 95%CI: 3.0-9.6; p<0.0001) tertiles of peak-exercise BNP were powerful independent predictors of events. Further adjustment for resting BNP and exercise-induced increase in MG (ΔMG) and SVi (ΔSVi) led to similar results (T2: HR=2.2; 95%CI: 1.2-4.2; p=0.007; and T3: HR=4.8; 95%CI: 2.5-9.3; p<0.0001).

Conclusions: In asymptomatic patients with AS, peak-exercise BNP level provides important incremental prognostic value beyond what is achieved by demographic and echocardiographic data, and resting BNP level. These findings lend support to the measurement of BNP during exercise to enhance risk stratification in asymptomatic AS.