(35%) had a pre-capillary PH, 6 (23%) a post-capillary PH, and 11 (42%) a reactive post-capillary PH. By using transthoracic echocardiography, the right ventricular diameter was 32±5 mm and the right atrial area 29±11 cm². The right ventricular systolic function was impaired, with a tricuspid annular plane systolic excursion of 17±4 mm, a peak tricuspid annular S wave of 10±6 cm/s and a peak systolic strain of the right ventricular free wall of –16±6%. Factors associated to more severe symptoms were right atrial and ventricular dilatation and higher levels of PH.

**Conclusion:** Reactive post-capillary PH is predominant in elderly patients with preserved left ventricular function and no valve disease. However, more than a third of these patients have pre-capillary PH, which needs a right heart catheterization to be assessed, and could benefit from specific treatments.

## 069

### Subclinical right ventricular dysfunction in heart failure with preserved left ventricular ejection fraction

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**Objective:** To assess right ventricular (RV) function in patients with heart failure related to left ventricular (LV) diastolic dysfunction with preserved ejection fraction.

**Methods:** We enrolled in this study 50 patients with heart failure related to diastolic dysfunction with preserved LV ejection fraction (group 1) and a control group consisting of 50 patients with asymptomatic diastolic LV dysfunction (group 2). The 2 groups had similar mean ages, sex ratio and LV ejection fraction. We used standard echocardiography and tissue Doppler imaging (TDI).

**Results:** Right ventricular diastolic diameter, RV ejection fraction and the tricuspid annular plane systolic excursion were similar in both groups. However, RV TDI-derived myocardial performance index was higher in group 1 (0.58±0.7 vs. 0.33±0.8, p< 0.01) suggesting RV systolic dysfunction. Also the tricuspid annulus systolic velocities obtained at the basal RV free wall were significantly decreased in group 1 (9.8±14 cm/s vs. 14.1±1.6 cm/s, p<0.01). In addition tricuspid annulus early diastolic velocities were significantly reduced in group 1 (–7.1± 1.5 cm/s vs. –10.5±1.6 cm/s, p<0.01) with lower ration of early to late diastolic velocities reflecting diastolic RV dysfunction. We also observed higher pulmonary arterial pressures in the group 1.

**Conclusion:** Patients with heart failure with preserved LV ejection fraction and diastolic dysfunction may develop postcapillary pulmonary hypertension leading to RV dysfunction.

## 070

### Heterogeneity in regional peaks of left ventricular deformation is correlated with exercise capacity in primitive hypertrophic cardiomyopathy

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**Objective**: Previous studies have described a left ventricular (LV) heterogeneity in regional peaks of deformation in patients with primitive hypertrophic cardiomyopathy (HCM). We studied this heterogeneity in HCM patients with echocardiography both at rest and during exercise in order to evaluate its correlation with exercise capacity.

**Methods:** Thirty consecutive HCM patients were evaluated with echocardiography at rest and during exercise on a dedicated table. 2D speckle tracking echocardiography (STE) was used to assess LV deformation heterogeneity according to the standard deviation between systolic peaks of regional longitudinal strains.

**Results:** Age was 55.1±12.7 yrs, maximal wall thickness was 20.3±.4 mm. Maximal load during exercise was 94±41 Watts. LV ejection fraction was preserved both at rest and during exercise (67±8% at rest and 69±8% during exercise). Global longitudinal strain (GLS) was altered (–15.5±4.1% at rest and –15.2±5.9% during exercise). Heterogeneity in regional peaks of deformation was 54.6±27.8 ms at rest and 41.3±23.9 ms during exercise. We noted correlations between maximal load achieved (r=–0.48, p=0.007), exercise GLS (r=0.47, p=0.009) and maximal LV thickness (r=0.48, p=0.007) with the level of LV deformation heterogeneity recorded during exercise. These correlations were lower if we considered LV deformation heterogeneity at rest. The population was then divided in 2 groups according to the level of exercise heterogeneity in regional peaks of deformation (cut-off value of 41 ms, i.e. mean value of the global population). The group with the more marked heterogeneity of LV deformation showed the thicker wall, the lower GLS at exercise and the weaker exercise capacity. This result was independent of the age.

**Conclusion:** In CMH patients exercise echocardiography add information. Indeed heterogeneity in regional peaks of deformation in longitudinal LV is correlated with exercise capacity and importance of myocardial hypertrophy.

## 071

### Assessment of diastolic function from velocity-encoded cardiac magnetic resonance data in patients with hypertrophic cardiomyopathy

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**Aim:** To assess the value of velocity and flow rate-related parameters obtained by cardiac magnetic resonance (CMR) for evaluation of left ventricular (LV) diastolic function (DF) in patients (pts) with hypertrophic cardiomyopathy (HCM).

**Methods:** CMR was performed in 26 HCM pts and 24 healthy volunteers (HV) matched for age, gender, body surface area (BSA) and blood pressure. DF parameters were obtained using a semi-automated software enabling extraction of transmitral flow, including transmitral Ef and Af flow rate peaks, isovolumetric relaxation time (IVRT) and early peak diastolic longitudinal myocardial velocity E' obtained using 2D phase contrast-CMR. LV mass and volumes and left atrial (LA) volumes were measured from cine CMR images.

**Results:** Mean age was 47.0±20.2 years in HCM pts and 47.5±16.1 in HV (p=NS). LV mass, mass/end-diastolic volume and LA volumes were increased in HCM pts (table). Late gadolinium enhancement was found in 20 HCM pts. While there was no significant difference in Ef/Af, myocardial longitudinal velocity E' and LA emptying fraction were markedly lower in HCM pts. Furthermore, E/E' ratio and E wave deceleration time (DT) were higher in HCM pts. There was a linear relationship between increased LV mass and increased LA volumes (p<0.001), IVRT (p=0.003), DT (p=0.002), E/E' (p=0.002) and decreased E' (p=0.003) independent of age, gender and BSA.

**Conclusion:** Comparison of HCM pts with HV by CMR showed altered LVDF and increased LA volumes related to increased LV mass. Assessment of DF may be considered for routine comprehensive evaluation of LV function in HCM.

***Table – Results***

| | Normal (n=24) | HCM (n=26) | p |
|---|---|---|---|
| LV mass (g) | 132.0 (32.8) | 217.3 (92.0) | 0.0001 |
| LV mass/EDV (g/ml) | 1.0 (0.3) | 1.5 (0.5) | 0.0001 |
| E wave DT (ms) | 202 (41) | 247 (63) | 0.005 |
| IVRT (ms) | 86 (32) | 126 (78) | <0.0001 |
| E' (cm/s) | 8.8 (4.6) | 3.1 (1.9) | <0.0001 |
| E/E' | 7.8 (4.4) | 31.4 (22.1) | <0.0001 |
| LA EDV (ml) | 62.9 (16.4) | 85.3 (44.8) | 0.03 |
| LA ESV (ml) | 31.6 (9.4) | 51.4 (30.0) | 0.004 |
| LA emptying fraction (%) | 50.1 (7.7) | 40.0 (11.0) | 0.0007 |