Abstract: **P286**

**Left ventricular dyssynchrony according to phase analysis from myocardial perfusion imaging in patients with hypertrophic cardiomyopathy**

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Background: Hypertrophic Cardiomyopathy (HCM) affects predominantly the left ventricle (LV), in most cases with patients maintaining a preserved systolic function. According to the relative thickness of ventricular walls, it can present as asymmetric septal (HCMS), apical (HCMA) or concentric (HCMC) phenotype. These structural changes can result in a delayed activation of some ventricular segments, leading to an uncoordinated or asynchronous contraction.

Purpose: To evaluate the LV mechanical dyssynchrony in patients with HCM using the Phase Analysis technique from gated-SPECT Myocardial Perfusion Imaging (MPI), also exploring its relation with other LV structural and functional parameters.

Methods: The clinical records of 35 patients referred for MPI with previous diagnosis of HCM were retrospectively reviewed. LV mechanical dyssynchrony was quantified according to Phase Standard Deviation (PSD) using appropriate software. PSD in patients with HCM was compared to a control group (N=20) and between the different phenotypic subtypes in the HCM population. Demographics, electrocardiographic and echocardiographic features were investigated for possible association with the degree of LV mechanical dyssynchrony. Statistical analysis encompassed Mann-Whitney U and Kruskal-Wallis tests, Spearman’s correlation and multivariable linear regression analysis.

Results: HCM patients had significantly higher PSD than controls (mdn 17.92º vs 10.56º, p=0.003). Among these, different phenotypic variants of HCM were noted: HCMS in 22 (62.9%), HCMC in 6 (17.1%) and HCMA in 7 (20.0%) patients. HCMS presented a lesser degree of LV mechanical dyssynchrony comparing to the other phenotypes (mdn PSD HCMS 13.13º, HCMA 21.82º, HCMC 21.35º; p=0.029). Moreover, in patients with HCMA or HCMC, LV mechanical dyssynchrony (PSD) correlated with the QRS interval (r=0.719; p=0.006) and with LV diastolic diameter (r=0.719; p=0.006), while in patients with HCMS variant, PSD correlated significantly with the interventricular septal thickness (r=0.460; p=0.031).

According to a multivariable analysis model (adjusted R² 0.461, p=0.002) for the entire HCM population, QRS duration (b=0.224; p=0.013; CI 95% 0.052-0.396) and LV diastolic diameter (B=0.962; p=0.038) were positive predictors of PSD, while HCMS subtype was associated with lower PSD values (B=−15.373; p=0.019).

Conclusion: HCM associates with LV mechanical dyssynchrony, which seems to relate mainly to the concomitant presence of electric dyssynchrony and increasing LV (diastolic) diameter. The degree of dyssynchrony is inhomogeneous among different HCM phenotypes, being less prominent in asymmetric septal hypertrophy.