

## P1547

**Left ventricular papillary muscle strain as an indicator of hypertrophic cardiomyopathy**

Ikeda M.; Kajikawa Y.; Hirota M.; Ueda A.

Fukuyama Medical Center, Department of Cardiology, Fukuyama, Japan

**Background**

Although recognized as part of the mitral valve complex, few studies have assessed the left ventricular papillary muscle.

We confirmed during autopsy that papillary muscle consists of longitudinal aligned muscle fibers, and that the papillary muscle originated from the left ventricular oblique muscle. Therefore, papillary muscle contraction was considered only in the longitudinal direction.

**Purpose**

We previously reported that left ventricular papillary muscle strain (LV-PMS) in 100 patients without organic heart disease was correlated with multiple left ventricular function assessment parameters.

This study aimed to determine whether left ventricular papillary muscle strain (LV-PMS) in patients with hypertrophic cardiomyopathy (HCM) is correlated with left ventricular function parameters as in non-HCM patients.

**Methods**

We measured left ventricular papillary muscle strain (LV-PMS) between two points on papillary muscles except where chordae adhere and the left ventricular wall, and compared values between patients without organic heart disease and with hypertrophic cardiomyopathy (HCM).

Among 1,344 patients who were assessed by echocardiography at our hospital between January and June 2018, we selected 42 (mean age,  $68.9 \pm 17.4$  years; male, 67%) who did not have coronary heart disease and in whom left ventricular papillary muscle contraction strain (LV-PMS) could be determined. Obvious anterior and posterior papillary muscles were evaluated. We also analyzed age, EF,  $e'$ ,  $s'$ ,  $E/e'$ ,  $E/A$ , left atrial volume index (LAV-I) and global longitudinal strain (GLS) as possibly relevant factors.

**Results:** Among the 42 patients, 22 (52%) and 17 (40%) had hypertension and HCM, respectively. We measured the strength of linear associations among paired variables (LV-PMS, age, EF,  $e'$ ,  $s'$ ,  $E/e'$ ,  $E/A$ , LAV-I and GLS) using Pearson product-moment correlation coefficients.

Age ( $r = 0.64$ ),  $e'$  ( $r = -0.76$ ),  $s'$  ( $r = -0.61$ ), LAV-I ( $r = 0.61$ ) and GLS ( $r = 0.57$ ; all  $p < 0.001$ ), as well as  $E/e'$  ( $r = 0.44$ ,  $p < 0.05$ ) significantly correlated in patients without HCM, whereas only GLS correlated in patients with HCM ( $r = 0.723$ ,  $p < 0.001$ ).

One-way analyses of variance showed that LV-PMS values significantly differed only among patients without HCM when categorized according to age  $< 50$ ,  $\geq 50 < 75$  and  $> 75$  years ( $p < 0.001$ ), whereas these values significantly differed in all patients ( $p < 0.05$ ) when categorized according to GLS  $< -20\%$ ,  $\geq -20$  to  $< -15\%$  and  $> -15\%$ .

**Conclusions:** We found that LV-PMS correlated with five factors including age in patients without HCM, but only with GLS in those with HCM. Despite the small study cohort, we considered that LV-PMS and GLS would be useful for evaluating left ventricular function in patients with HCM.