

中文題目:右心室形變在相對健康個體運動能力的預測效力

英文題目: **The predictive role of right ventricular strain in exercise capacity of healthy subjects**

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Background:

Right ventricular (RV) function has been found to be a major determinant of exercise capacity in patients with heart failure. However, the role of RV function in exercise capacity in healthy subjects has never been studied. This study aimed to validate the role of RV strain derived from speckle tracking echocardiography for exercise capacity in healthy subjects.

Methods:

This study recruited apparently healthy subjects from health examination. Patients with atrial fibrillation, structure heart disease, coronary heart disease, and symptomatic heart failure were excluded. RV function represented by RV strain was derived from speckle tracking echocardiography in addition to traditional echocardiography parameters (Figure 1). Functional capacity was determined by a symptom limited treadmill exercise test with Bruce protocol.

Results:

Among 196 recruited subjects (age 55.06 ± 11.02 years, 56.12% male), 30 (15.3%) subjects represented impaired functional capacity ($MET < 8$), which was significantly correlated with age, left ventricular mass index (LVMI), pulmonary systolic pressure (PAP), early to late ventricular filling velocities (E/A), left ventricular filling pressure (E/E'), right ventricular myocardial performance index (RV_{MPI}) and right ventricular tissue doppler deceleration time (RV_{DT}). Regarding to

speckle tracking image, both global longitudinal strain of left ventricle (GLS) (-16.69±2.16% vs. -19.12±2.79%, $p < 0.001$) and RV free wall strain (RVS_FW) (-13.3±5.09% vs. -19.01±3.49%, $p < 0.001$) were significantly decreased in subjects with exercise intolerance. After multivariate logistic regression, RVS_FW was an independent predictor for impaired functional capacity (OR 1.28, CI 1.13-1.46; $p < 0.001$). Using -18.86 % as a cutoff point for RVS_FW, the sensitivity and specificity were 90% and 64%, respectively, for an impaired functional capacity (Figure 2).

Conclusions:

RV strain is an independent predictor for functional capacity in the apparently healthy subjects. RV function is an important determinant for exercise capacity.

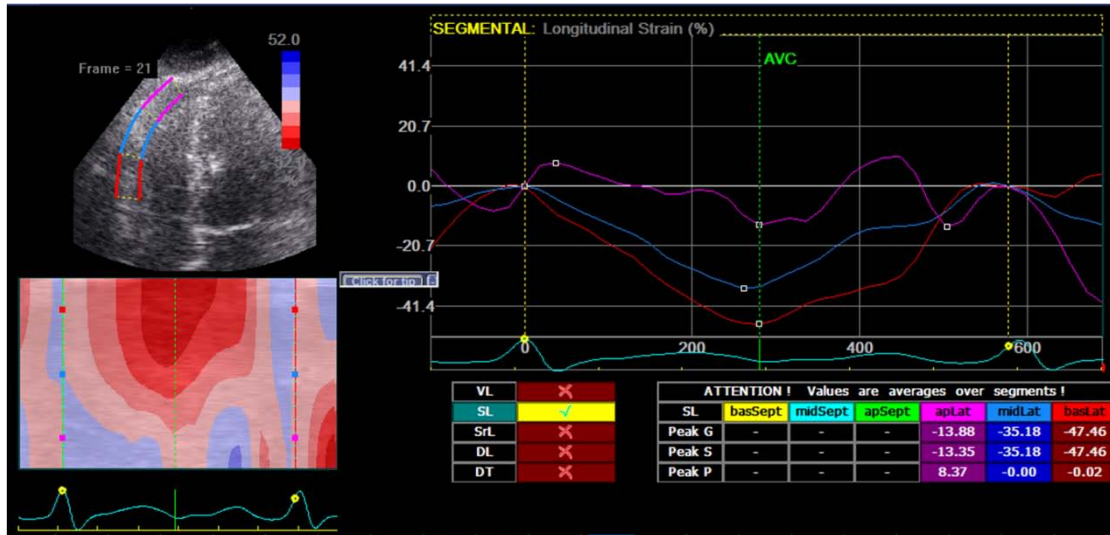


Figure 1. An example of global right ventricle strain measurement, which was calculated automatically by tracing the endocardial margin of the right ventricle in an apical four-chamber view. The average of the regional strains over RV lateral wall was recorded.

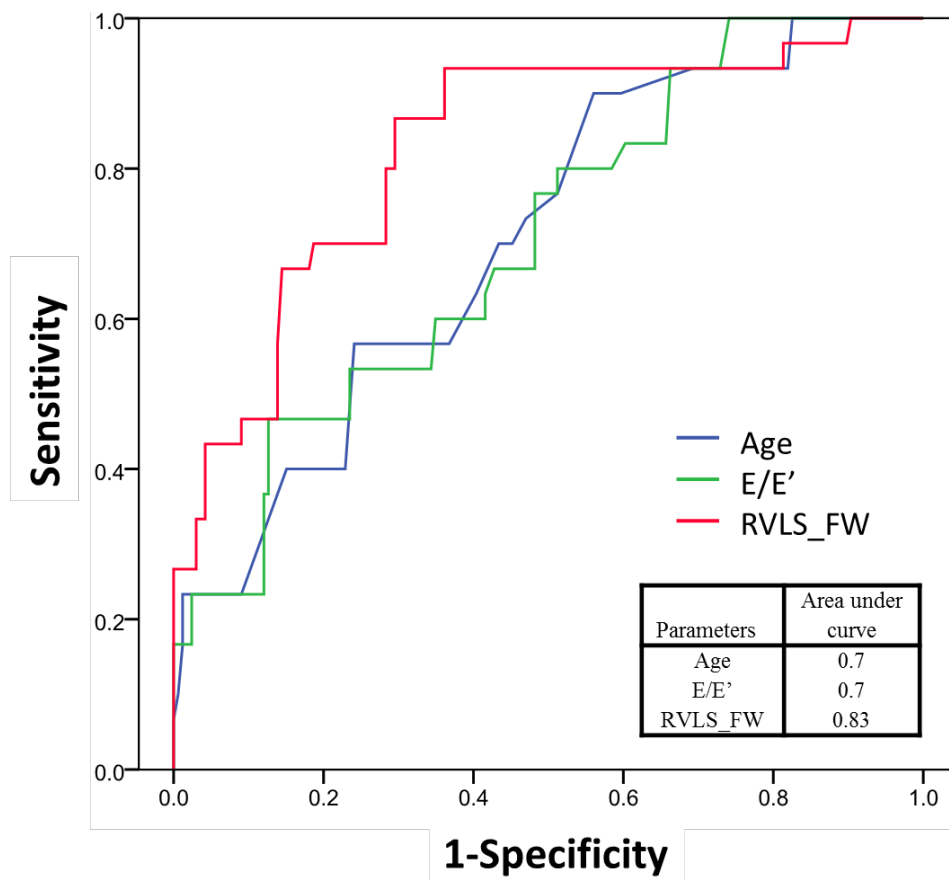


Figure 2. The areas under the ROC curves for the predictor of Impaired EC were 0.83 for RVLS_FW, 0.7 for age, and 0.7 for E/E'. RVLS_FW represented the superior predictive value of occult myocardial dysfunction and impaired EC compared with other parameters