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Subclinical cardiac abnormalities and physical function in asymptomatic elderly

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Background

While it is known that the heart remodels progressively with age, data characterizing the relationship between cardiac remodelling and function on physical function among the aged are limited.

Aim

We investigated the association between left ventricular (LV) concentricity and LV function with handgrip strength (shown to correlate with mortality in the elderly) and timed-up-and-go test (for lower extremity function) among clinically asymptomatic elderly.

Methods

In this community-based cohort of 28 patients free of known cardiac disease (mean age 73.8 ± 4) with preserved LV ejection fraction (mean LVEF 69.8 ± 6.4) and cardiac index (mean 3.1 ± 0.57), we assessed cardiac remodelling by cardiac MRI (concentricity$^{0.67}$ (mass/end-diastolic volume$^{0.67}$) and LV function by resting tissue Doppler imaging (TDI) performed at the septal and lateral mitral annulus, deriving myocardial systolic velocity (S), diastolic velocity (E) and ratio of E/A.

Results

There were significant correlations between handgrip and LV concentricity (r = 0.49, p = 0.008), lateral S (r = 0.45, p = 0.041), septal A (r = 0.45, p = 0.04), and between timed-up-and-go and LV concentricity (r = 0.47, p = 0.013), lateral E/A (r=-0.49, p = 0.023), septal A (r = 0.45, p = 0.043). By regression analysis, LV concentricity (β=0.071, 95%CI 0.011-0.132, p = 0.023) (with adjustment for systolic blood pressure) and lateral E/A (β=-0.15, 95%CI -0.29—0.009, p = 0.039) were independently predictive of handgrip strength and timed-up-and-go respectively.

Conclusions

These preliminary observations provide important insights into a possible link between subclinical alterations in cardiac structure and function and physical function, further study is required to clarify these findings with a view to preserve health and function amongst the elderly.

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