Left Ventricular Longitudinal Myocardial Contraction Is Associated with Cognitive Status: A Cross-Sectional Study in Community-Dwelling Populations

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Abstract

Aims: The interaction between the heart and brain is highly complex. Left ventricular (LV) longitudinal contraction is the most sensitive to the presence of myocardial disease. Whether subclinical change in LV longitudinal contraction assessed by echocardiography is associated with cognitive impairment in the general population has not been investigated. Methods and Results: All residents aged [?] 35 years, living in five villages of Shunyi, a suburb district of Beijing, were invited to participate in the study from June 2013 to April 2016. This was an exploratory cross-sectional analysis of the baseline data of 894 participants enrolled in the Shunyi Study. Cognitive status was evaluated using the Montreal Cognitive Assessment (MoCA). LV longitudinal contraction was assessed by the peak systolic velocity measured at the mitral annulus (Sm) obtained by Tissue Doppler imaging echocardiography. Cognitive impairment (MoCA score <26) was found in 771 (86.2%) participants. LV longitudinal myocardial contraction (Sm) and diastolic function (Em, E/A ratio, and E/e?) were associated with cognitive impairment (all P<0.01). The association between Sm and cognitive impairment remained significant after adjusting for age, sex, education level, physical activity, vascular risk factors, and cerebral small-vessel disease (OR, 0.84; 95% CI, 0.73–0.97, P=0.02). Receiver operating characteristic curve analysis for Sm in identifying normal cognitive status showed the area under the curve of 0.59 (95% CI, 0.54–0.65; P<0.01). Conclusions: Our findings suggest that LV longitudinal myocardial contraction in the general population is associated with cognitive status in Chinese community-dwelling populations.

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1,586 individuals

→ 461 individuals without echocardiography examination data.

1,125 individuals

→ 55 individuals with incomplete MOCA data.

1,070 individuals

→ 82 individuals with incomplete SVD score.

998 individuals

→ 75 individuals with history of stroke.

913 individuals

→ 19 individuals with poor echocardiography image quality.

894 individuals were included in the analysis