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Absence of association between arterial stiffness and white matter hyperintensities in otherwise healthy hypertensive elderly Chinese

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Introduction: Arterial stiffness has been observed to be associated with white matter hyperintensities (WMH) in different populations. This study aimed to investigate whether such association exists in otherwise healthy hypertensive elderly Chinese.

Methods: Degree of WMH has been assessed based on fluid-attenuated inversion recovery (FLAIR) magnetic resonance imaging using Fazekas white matter scale scores, and then dichotomised to compare with quartiles of brachial-ankle pulse wave velocity (BaPWV), a marker of arterial stiffness. Univariate and multivariate logistic regression models were used to determine the odds ratio (OR) for advanced WMH.

Results: We studied a population of 252 otherwise healthy hypertensive Chinese over 65 years old, and advanced WMH was present in 53 (22.4%). In the highest BaPWV quartile, 22 (34.9%) subjects had advanced WMH. Significant association was observed between the highest quartile of BaPWV and advanced WMH when using the univariate logistic regression model. However, after controlling for demographic and arterial vascular risk factors (age, gender, body mass index, smoke history, grade of hypertension, duration of hypertension, total cholesterol, triglycerides, and high-density lipoprotein cholesterol), there was no statistically significant association (odds ratio = 2.101; 95% confidence interval, 0.781-5.649).

Conclusion: This study did not provide any evidence for significant association between arterial stiffness and WMH. Fazekas white matter scale score may be too simple a tool to reveal the association and we shall pursue more suitable resolution for further investigation.

Relationship between diabetic retinopathy and subclinical myocardial dysfunction in patients with diabetic mellitus

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Background: Diabetic mellitus (DM) patients may have cardiac structure and functional changes or microvascular disease in the absence of cardiovascular disease history. The relationship between the occurrence of diabetic microvascular disease and cardiac change in DM patients without a history of heart trouble is unclear. The present study sought the correlation between diabetic retinopathy, which is one kind of microvascular disease, and cardiac functional changes by (a) basic ophthalmic testing and (b) detailed echocardiography for cardiac assessment.

Methods: A total of 251 patients with type 2 DM without cardiovascular diseases were recruited. Transthoracic echocardiography was performed at the rest state as well as after treadmill exercise and analysed in detail with the following parameters: (i) left ventricle (LV) systolic function was assessed by Simpson's method derived ejection fraction (EF) and speckle tracking derived global longitudinal strain (GLS), (ii) myocardial structural alteration by calibrated integrated backscatter (cIBS), (iii) diastolic function by tissue Doppler derived E/E' ratio, and (iv) diastolic function reserve index (DFRI). Furthermore, all patients undertook a full-fledged photography programme. Retinopathy was scored and classified as with retinopathy or without diabetic retinopathy.

Results: Of the 251 subjects (mean age, 63.13 ± 9.31 years; 46.2% male), 24.3% had retinopathy. Patients with and without diabetic retinopathy (as a categorical variable) had similar LVEF and cIBS. However, retinopathy had a significant correlation with LV GLS ($r = -0.18$, $P < 0.01$), E/E' ($r = 0.19$, $P < 0.01$), diastolic dysfunction grade ($r = 0.18$, $P < 0.01$), and DFRI ($r = -0.23$, $P = 0.02$). Furthermore, these correlations were independent of potential confounding factors.

Conclusion: This study indicated that the occurrence of retinopathy significantly correlates with GLS, E/E', diastolic dysfunction grade, and DFRI. Above all, the correlation still existed after adjusted by potential confounding factors, suggestive of an independent relation between retinopathy and cardiac function. The link between these parameters highlighted the importance of further cardiac assessment and timely treatment for DM patients with diabetic retinopathy who have no cardiac disease history and relevant symptoms.