

Carotid Vascular Strain Predicts Cardiovascular Events in Patients with Hypertension

Wei-Chuan Tsai¹, Wen-Huang Lee¹, Huey-Ru Tsai¹, and Mu-Shiang Huang¹

¹National Cheng Kung University Medical Center

June 1, 2021

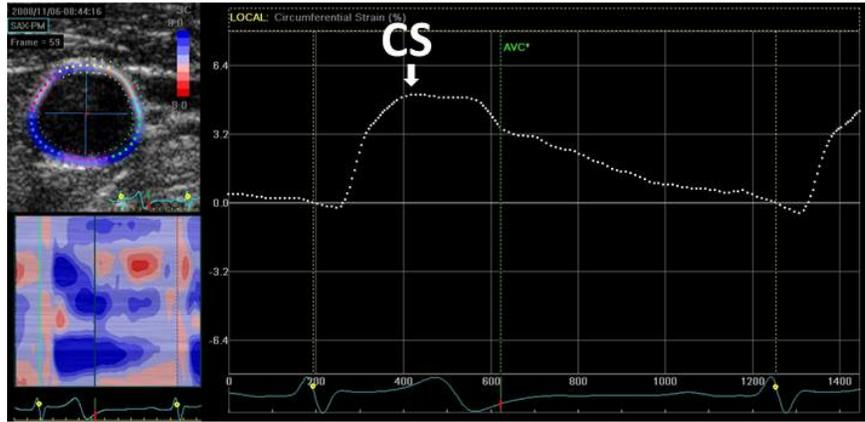
Abstract

Background: We aim to investigate prognostic effects of carotid strain (CS) and strain rate (CSR) in hypertension. **Methods:** We prospectively recruited 120 patients being treated for hypertension (65.8 ± 11.8 years, 58% male) in this observational study. Peak circumferential CS and peak CSR after ejection were identified using two-dimensional speckle tracking ultrasound. Major cardiovascular events were any admission for stroke, acute coronary syndrome, and heart failure. **Results:** After a mean follow-up period of 63.6 ± 14.5 months, 14 (12%) patients had cardiovascular events. Age (75.3 ± 9.2 vs. 64.6 ± 11.6 years; $p = 0.001$), systolic blood pressure (131.8 ± 15.5 vs. 143.1 ± 16.6 mmHg; $p = 0.021$), diastolic blood pressure (74.6 ± 11.4 vs. 82.1 ± 12.2 mmHg; $p = 0.039$), use of diuretics (71 vs. 92 %; $p = 0.014$), carotid CS (2.17 ± 1.02 vs. 3.28 ± 1.14 %; $p = 0.001$), and CSR (0.28 ± 0.17 vs. 0.51 ± 0.18 1/s; $p < 0.001$) were significantly different between the patients who did and did not reach the end-points. Multivariate Cox regression analysis controlling for age, systolic blood pressure, diastolic blood pressure, and use of diuretics showed that CS (HR 0.425, 95%CI 0.223-0.811, $p = 0.009$) and CSR (HR 0.001, 95%CI 0.000-0.072, $p = 0.001$) were independent predictors for cardiovascular events. **Conclusion:** In conclusions, decreased CS and CSR were associated with cardiovascular events in hypertension.

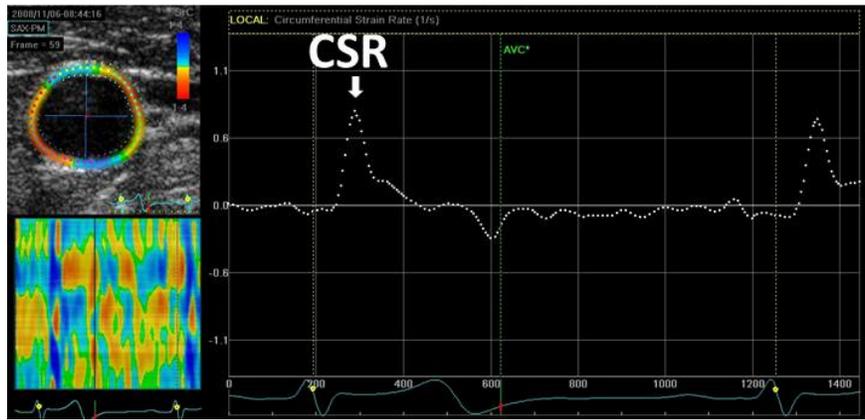
Hosted file

Px of Carotid strain(echocardiography) c table.doc available at <https://authorea.com/users/417358/articles/524490-carotid-vascular-strain-predicts-cardiovascular-events-in-patients-with-hypertension>

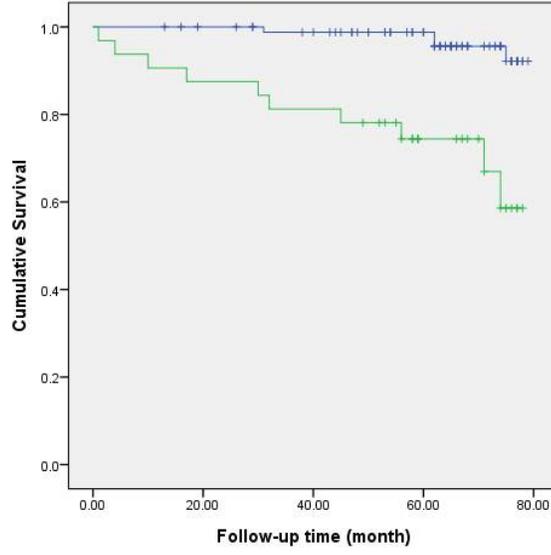
A.



B.



A.



B.

