

Segmental diastolic dysfunction of left ventricular wall

in patients with 50% coronary artery stenosis

Introduction: Coronary artery stenosis (CAS) is known to cause segmental diastolic dysfunction of the left ventricular (LV) wall. However, the degree of CAS necessary to cause LV diastolic dysfunction is unknown. We utilized strain rate (SR) profile of resting echocardiography to investigate the segmental diastolic dysfunction of patients with various degrees of CAS.

Method: Total 126 patients were enrolled in this study. Among them 43 patients had normal coronary arteries (gr-N). The remaining 83 patients had CAS (gr-S). Three images of apex approach view were analyzed [25% CAS (gr-S1): 24 segments (seg.) of 22 patients, 50% CAS (gr-S2): 32 seg. of 20 patients, 75% CAS (gr-S3): 26 seg. of 20 patients, 90%≤ CAS (gr-S4): 21 seg. of 21 patients]. There was no statistically significant difference between gr-N and gr-S with regard to age, blood pressure, heart rate and fasting blood glucose level.

During the diastolic phase of SR profile, E (1/s: speed of active self-extension of myocardium) and E time (msec: time from the end-systolic time to peak E value time) were used as variables. Peak E and peak E/E time (acceleration rate of speed of self-extension) were compared. A was not used as a variable, because it expresses

passive nonself-extension of myocardium.

Results: See the table. By SR profile, diastolic dysfunction of stenotic coronary artery segments was detectable in patients with 50% CAS.

Conclusion: Although 50% CAS is not thought to cause myocardial ischemia, segmental diastolic dysfunction in patients with 50% CAS may be an early sign of myocardial ischemia. Patients with 50% CAS should undergo further hemodynamic testing to evaluate for diastolic dysfunction.

	gr-N	gr-S1	gr-S2	gr-S3	gr-S4
	normal	25% stenosis	50% stenosis	75% stenosis	90%≤ stenosis
	Peak E (1/s)				
values	1.85 ± 0.34	1.75 ± 0.48	1.34 ± 0.5	1.13 ± 1.85	1.03 ± 0.21
p <		N.S.	p < 0.05	p < 0.001	p < 0.001
	Peak E / E time (1/s ²)				
values	17.23 ± 10.27	15.22 ± 8.23	10.11 ± 4.57	7.28 ± 2.26	6.67 ± 2.86
p <		N.S.	p < 0.01	p < 0.001	p < 0.001