Diagnosis of Coronary Vasospasm by Detection of Postischemic Regional Left Ventricular Delayed Relaxation Using Echocardiographic Evaluation with Color Kinesis

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Summary

Background: Coronary vasospasm has been diagnosed by invasive provocative procedures during coronary arteriography. It would be useful to have a reliable, noninvasive, and safe diagnostic method for coronary vasospasm. Regional left ventricular (LV) diastolic dysfunction may persist without systolic dysfunction after an episode of coronary vasospasm. Color kinesis (CK) has been recently developed to facilitate the echocardiographic evaluation of regional wall motion.

Hypothesis: Color kinesis may be useful for diagnosis of coronary vasospasm by detection of postischemic regional LV diastolic wall motion abnormality.

Methods: Fifty-one consecutive patients with the last chest symptom within 2 weeks (4 ± 3 days) were studied echocardiographically. Regional fractional area change during the first 30% of LV filling time in percentage of the segmental end-diastolic area change (CK diastolic index) was used to identify diastolic endocardial motion asynchrony.

Results: After diagnostic coronary arteriography with spasm provocation, 26 patients were diagnosed with coronary spastic angina (CSA) and the other 25 with chest pain syndrome (CPS). Regional delayed relaxation (CK-diastolic index ≤ 50%) or diastolic asynchrony had been observed in at least one region in 25 (96%) patients with CSA, whereas it had been noted in 2 (8%) patients with CPS. In 17 (65%) patients with CSA, it had been detected in multiple vascular territories, suggesting multivessel spasm. The diastolic asynchrony disappeared in CSA after a month of angina-free period.

Conclusion: Analysis of CK images allows identification of regional LV delayed relaxation or diastolic asynchrony in patients with coronary vasospasm, differentiating them from patients with chest pain syndrome (sensitivity 96%, specificity 92%).

Key words: coronary vasospasm, coronary spastic angina, echocardiography, color kinesis, diastolic dysfunction

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