

Regional Myocardial Hibernation in Stable Angina Pectoris

— Proven by Strain and Strain Rate —

Purpose: The strain rate (SR) is decreased in the stenotic coronary artery area (stenotic-CAA) even in stable angina (s-AP) at rest. The following discriminant function was created using this phenomenon and values of four factors of the longitudinal 2-dimensional SR curve: $Z = 4.91 + 1.02 \times (100\text{msec} - \text{SR}) + 1.23 \times (200\text{msec} - \text{SR}) - 0.46 \times (\text{minimum-SR between 100 and 200msec}) + 4.83 \times (\text{mean-SR during 100 and 200msec})$. For $Z > 0$, stenosis was $\geq 75\%$ with discriminant probability of 86.39%. Whether the SR decrease was due to ischemia or not was examined by comparing it with the post-systolic index (PSI) of patients who underwent coronary artery intervention (PCI). **Method:** 32 lesions $\geq 75\%$ stenosis of 26 patients of s-AP with no abnormal left ventricular wall motion in B-mode imaging who underwent PCI were enrolled in this study. The PSI and the Z values of pre- and post-PCI at rest were examined at two-week intervals until $Z < 0$. **Results:** The PSI values were $12.78 \pm 13.59\%$ pre-PCI and $0.26 \pm 0.54\%$ post-PCI ($p < 0.001$). The Z values were $4.06 \pm 4.01/\text{sec}$ pre-PCI and $-1.57 \pm 2.07/\text{sec}$ post-PCI ($p < 0.001$). Both values significantly improved due to resolution of ischemia. The recovery time of PSI was 67.1 ± 31.6 days and of Z was 99.4 ± 45.6 days. **Conclusion:** In the stenotic-CAA of s-AP at rest, the changes in PSI and SR are considered to occur due to ischemia. In addition, since the improvements in SR and PSI after PCI require long term, it is appreciated that the stenotic-CAA of s-AP was in a state of hibernation.