Clinical Significance of Exercise-Induced ST Segment Depression in Patients with Lateral Myocardial Infarction Involving the Left Circumflex Artery: Evaluation by Exercise $^{99m}$Tc-MIBI Myocardial Scintigraphy

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**[Purpose]** The aim of this study is to clarify the causes of exercise-induced ST-segment depression in patients with broad lateral old myocardial infarction involving LCX (LCX-OMI) without ischemia on exercise scintigraphy.

**[Method]** Twenty one patients (M/F = 11/10, age = 62 ± 19 years) with myocardial infarction involving LCX (LCX-MI), but without fill-in on exercise and rest MIBI quantitative gated SPECT (QGS), were selected. They were divided into two groups of Group ST(+) (n = 11, with significant ST depression (max - 2.8 ± 0.4 mm)), Group ST(-) (n = 10) without ST depression. On 20 SPECT segments of both exercise and rest SPECT, we scored uptake score as DS (0 = normal to 3 = defect) and wall motion as WMS (0 = normal to - 5 = dyskinesis) and summed DS (TDS) and WMS (TWMS) in LCX region, furthermore, calculated the difference of TWMS ($\Delta$TWMS {exercise - rest}), end diastolic volume (EDV) and ejection fraction (EF) during exercise were compared between the two groups.

**[Result]** Group ST(+) showed significantly ($p < 0.01$) lower EF (35.4 ± 9.2% vs. 60.2 ± 6.2%), larger EDV (146 ± 53 ml vs. 93 ± 15 ml), higher TDS (5 vs. 7 ± 3), lower TWMS ( - 25 ± 9 vs. - 6 ± 5), furthermore lower $\Delta$TWMS ( - 6.9 ± 4.0 vs. - 2.0 ± 0.8) than Group ST(-).

**[Conclusion]** Exercise-induced significant ST depression in V2-4 without ischemia in LCX-MI was observed in patients with broad LCX-MI, low EF, and was related to impaired wall motion in LCX region. ST depression in V2-4 was considered to appear as Miller image of ST elevation at postero-inferior wall due to disturbed wall motion on exercise.

**Key words:** Disturbance of wall motion, Exercise induce ST-depression, Gate SPECT.