Factors which determine the extent of exercise-induced ST elevation in infarcted area: presented by Medical*Online


Exercise-induced ST elevation in infarcted area has been recognized to be related to LV asynery, however myocardial ischemia can also induce ST elevation. In this study, factors which determine the extent of ST elevation was re-evaluated using stress myocardial scintigraphy (S-SG). Among 65 pts with previous anterior MI and documented LAD single vessel disease, 19pts who had A ST<2.0mm had more abnormal Q waves, lower LVEF, more severe LV asynery compared to those with A ST<2.0mm. A ST correlated with the extent of MI estimated from TI images, indicating that ST elevation relates to LV asynery. A ST also correlated to the work load (double product) and inversely to the interval from the onset of MI. Among 23pts with previous MI and post-MI digital), ST elevation was correlated with the extent of redistribution in S-SG, indicating that myocardial ischemia also contributes to ST elevation. Ischemia-induced ST elevation had characteristic concave ST wave with ST wave reversion. Thus, exercise induced ST elevation is determined by four factors: extent of MI, ischemia, work load and interval from the onset of MI.

Effect of isosorbide dinitrate on myocardial perfusion state assessed by exercise 201-TI myocardial perfusion imaging (MPI).

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We studied the effect of iv-ISDN on myocardial perfusion state in patients with coronary disease (CAD), assessed by exercise 201-TI MPI. In control study, the response of myocardial perfusion state to exercise (EX) was divided into 3 regions: Normal (NL) region was a ROI with 100% uptake index (UI) during EX, redistributed (R) region was a ROI with diminished UI of lower than 85% during EX and sequentially increased by 5% or greater in delayed image, persistent defect (PD) region was a ROI with UI of lower than 75% during EX and not increased by 5% or more in delayed image. ISDN was administered by dose of 0.1 mg/kg/hr, and then EX was repeated to the same workload using same protocol. The R regions significantly increased in UI during EX after iv-ISDN. Although the PD regions didn't increase in UI. Change of ROI counts was significantly greater in patients with one vessel disease than multivessel disease, and was greater in patients with collateral vessels than patients without collateral vessels after iv-ISDN. Our results suggested that ISDN improves myocardial perfusion state in ischemic myocardium and the effect are influenced by myocardial viability and severity of CAD.

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Regional thallium washout rate image as a new display of thallium myocardial image.

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A usual display of thallium-201(TI) myocardial image is not absolute but relative expression of myocardial ischemia, so it is not useful to express general myocardial ischemia without contrast. Then, we devised a new method of myocardial TI washout rate image (WR image) as a parameter of regional myocardial ischemia. This new TI-WR image was expressed of the regional TI-WR for 3 hours after the administration of TI, and expressed in 3 colors (red, yellow and blue) corresponding to the degree of regional TI-WR. The regional TI-WR on each pixel was calculated to subtract the delayed image which had been superimposed on the initial image from the initial image. This new TI myocardial WR image was useful to evaluate the regional myocardial ischemia especially in cases with general myocardial ischemia without contrast in usual TI myocardial image such as a angina pectoris with 3 vessels disease or severe aortic stenosis, and to evaluate the effect of the drug on myocardial ischemia during exercise with the same load.