Factors which determine the extent of exercise-induced ST elevation in infarcted area.

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 ΔST≤2.0mm had more abnormal Q waves, lower LVEF, more severe LV asynery compared to those with ΔST<2.0mm. ΔST correlated with the extent of MI estimated from Tl images, indicating that ST elevation relates to LV asynery. ΔST 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-exercise ischemia, ΔST 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 shape with T 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 ISDN on hemodynamics and myocardial blood flow in patients with coronary artery disease.

Effects of propranolol on hemodynamics and blood distribution in myocardium in 18 patients with coronary artery disease during exercise have been studied. One week after first exercise Tl-201 myocardial scintigraphy (EXMCS), 0.1mg/kg of propranolol was intravenously administered, and second EXMCS was performed at the same workload. Pulmonary artery wedge pressure (PAWP) and cardiac index (CI) were measured during leg exercise, with and without 0.1mg/kg of propranolol. In the results, propranolol neither increased exercise tolerance, nor improved symptoms significantly. During exercise, propranolol increased PAWP and lung uptake of Tl decreased CI significantly. On the contrary, propranolol improved ECG changes and exercise myocardial images by visual inspection. Thus, it is suggested that propranolol may depress cardiac function during exercise, but improve blood distribution in myocardium.

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

A usual display of thallium-201(Tl) 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 regional myocardial Tl washout rate (WR) image with a regional Tl-WR which was used as a parameter of regional myocardial ischemia. This new Tl-WR image was expressed of the regional Tl-WR for 3 hours after exercise on each pixel of myocardial image, and expressed in 3 colors (red, yellow and blue) corresponding to the degree of regional Tl-WR. The regional Tl-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 Tl myocardial WR image was useful to evaluate the regional myocardial ischemia especially in cases with general myocardial ischemia without contrast in usual Tl myocardial image such as 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.