

APPLICATION OF GLUCOSE-INSULIN

INTRAVENOUS INJECTION AGAINST

²⁰¹Tl-MYOCARDIAC IMAGE (PART II)

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Cardiomuscular image on ischemic heart-disease is now a useful method.

In the present study, combined intravenous method with ²⁰¹Tl-myocardial imaging was used for healthy normal subjects and patients with ischemic heart disease as the clinical application of G.I.-Tl method. Thus we have observed the increase ²⁰¹Tl-uptake into the heart-muscle,

METHOD

Both normal subjects and patients' groups were treated with ²⁰¹Tl alone in its 2mCi intravenously, and myocardial imaging was performed after 30 and 60 minutes.

For the same case, glucose: insulin (10 : 1) was intravenously instilled for one hour, immediately, myocardial imaging was executed by the use of ²⁰¹Tl- 2mCi after same interval.

Myocardial imaging was taken on the front, left slant front and left side facing position.

Comparison of ²⁰¹Tl single method with glucose insulin combined intravenous injection was made by the use of ²⁰¹Tl-accumulated activity and serum-disappearance rate of ²⁰¹Tl at each time.

RESULT

²⁰¹Tl-myocardial imaging due to the combined injection of glucose-insulin showed its higher accumulating rate than that of ²⁰¹Tl-single method.

²⁰¹Tl-serum disappearing rate showed its shorter half-life in serum, thus it seems to be useful to utilize ²⁰¹Tl-myocardial imaging combined with intravenous injection of glucose-insulin even to the cases impossible of exercise such as patients with acute myocardial infarction.

THALLIUM-201 MYOCARDIAL SCINTIGRAPHY AND RADIO-CARDIOGRAPHY AT REST AND DURING EXERCISE

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In order to assess myocardial perfusion and cardiac function, we performed ²⁰¹Tl myocardial scintigraphy(MSc) and ¹³¹I human serum albumin radiocardiography(RCG) on 11 subjects as control and 44 patients(pts) with ischemic heart disease. Furthermore, exercise MSc and RCG were carried out in 13 pts using bicycle ergometer.

By analog simulation analysis of RCG's, cardiac index(CI), stroke volume index(SI) and blood distribution were measured. Left heart volume(LHV) was computed according to mean transit time of the tracer in the left heart as the mixing chamber and includes the mean blood volume in the left atrium and the left ventricle. There was a good correlation between LHV measured by RCG and left ventricular end-diastolic volume obtained by contrast angiography (n=19, r=0.94).

According to MSc at rest, pts were divided into two groups with negative to small imaging defects (A, n=27) and with moderate to large imaging defects (B, n=17). In group B CI and SI were decreased and LHV was increased significantly more than those in control or in group A.

According to MSc during exercise, 13 pts were divided into two groups with (n=8) or without enlargement of imaging defects (n=5). In the group with enlargement of imaging defects LHV was significantly increased during exercise (p<0.005). In 7 pts who were studied with Swan-Ganz catheter, pulmonary diastolic pressure was elevated by more than 20 mmHg when LHV was increased. We consider that the increase of LHV with increased CI or SI represents an effect of Frank-Starling mechanism. Pts with severe coronary heart disease disclosed increased LHV and decreased SI during exercise.

Radiocardiograms at rest and during exercise support that decreased myocardial perfusion appears to indicate the depression of left ventricular function.