ASSESSMENT OF INFARCT SIZE BY SERIAL THALLIUM-201 MYOCARDIAL IMAGING IN PATIENTS WITH AUTE MYOCARDIAL INFARCTION

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Serial Thallium-201 myocardial scintigraphy were performed within a week, 2 and 8 weeks after the attack of myocardial infarction in order to evaluate initial scintigraphic infarct size and its serial scintigraphic change in 18 patients with acute myocardial infarction.

Infarct size was expressed as the arithmatic mean of the percent cold area (%CA) of the left ventricle in three views.

The initial %CA were divided into large %CA Group (≥ 25) and Small %CA Group (< 25) while the serial change of %CA were divided into improved (initial-last/initial %CA>0) and unchanged (≤ 0) Group.

Patients with initial small %CA showed a tendency to decrease serially infarct size, compared with patients with large %CA. Patients with large and unchanged %CA revealed lower cardiac output, stroke volume and higher pulmonary artery distolic pressure. Furthermore, radioisotope angiographic Ejection Fraction in those with large and unchanged %CA was significantly lower than that with small and improved %CA, while %CA in anterior myocardial infarction was closely related with ΣST in mapping ECG.

From the above fingings, it was suggested that serial myocardial scintigraphy was of great use for assessment of infarct size and the serial change of %CA might be indicative of the myocardial ischemic area including necrosis.

EXPERIMENTAL STUDIES ON IMAGE BY ^{201}Tl-Cl AND ^{99m}Tc-PYP SCINTIGRAPHIES IN MYOCARDIAL INFARCTION.

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Nineteen dogs each weighing 10 to 15Kg with myocardial infarction caused by ligation of the left anterior descending branch were used in this study. Coronary circulation in myocardium was studied by the fluorescein Na method.

As to ^{99m}Tc-PYP, within ten days after coronary ligation its ischemic area was described distinctly as hot image but after then hot image obviously showed its decreasing tendancy. Cold image by ^{201}Tl-Cl in ischemic area appeared even ten days after coronary ligation.

The ischemic area shown by both ^{99m}Tc-PYP and ^{201}Tl-Cl has a great similarity but ^{99m}Tc-PYP image showed more obvious boundary between its ischemic and healthy area than that of ^{201}Tl-Cl image. However, both areas were larger than ischemic area observed by the fluorescein Na method.

In comparison with the pathological findings in ischemic myocardium there were some relationships between the decrease of ^{99m}Tc-PYP activity and degeneration, especially, fibrosis of heart muscle.

So ^{99m}Tc-PYP image is very useful for diagnosis in acute stage, re-attack, and rehabilitation of myocardial infarction. And likewise, ^{201}Tl-cl image is very useful for diagnosis in both acute and old myocardial infarction, and also the infarcted size in myocardium may be roughly estimated by this ^{201}Tl-Cl image.