Myocardiac image in the use of 99mTc-pyrophosphate -Basic review-

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There is a fact that the jadgement on the accumulative degree of 99mTc-pyrophosphate into the heart-muscle is difficult. One of this reason is in the time needed from the intravenous injection of 99mTc-pyrophosphate to the collection of myocardiac image, therefore, We have performed the basic review and its based clinical applications on the preparation and use of image on 99mTc-pyrophosphate.

Method; In healthy normal group, 99mTc-pyrophosphate 15mCi was intravenously administered, thereafter, at 30, 60, 90, 120, and 240 minutes, myocardiac images were taken at the front , left aslant front in the angle of 45-degrees and the left side-facing positions, namely, from 3 directions , thus observation was made on myocardiac images at each time in the progress of time

Moreover, similar observation and measurement were made for the groups of acute myocardiac infarction and angina pectoris of unstable type.

Result;In various reports, the time from intravenous injection of 99mTc-pyrophosphte to the preparation of myocardiac image is 30 minutes in normal group for the maximum accumulation. After reaching the maximum accumulation, the level has been decreased in time-course. On the other hand, unlike the healthy normal group, the group of ischemic diseases showed no change on the accumulation at 30, 60,90 and 120 minutes.

Therefore, it seems necessary to consider the change in the progress of time for the judgement of accumulation of myocardiac image with 99mTc-pyrophosphate.

DUAL CAMERA BIPLANE STUDIES WITH COMPUTER SIMULTANEOUS AQUISITION AND PROCESSING OF DATA (IV).

APPLICATION FOR CARDIOVASCULAR STUDIES.

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The cardiovascular biplane studies were performed using the dual-scintillation camera and the computer system. Our previous reports (I-III) said the technical mutters and the applications to the brain and the lung studies. The system constructions were the same as before; HP and LFOV cameras, Searle Radiographics, Scintipac 200 data processor and the interfaces, Shimadzu.

The new software for this purpose was added to the system. It included ejection fraction (EF) and cardiac output (CO) calculations, map display, three dimensional display and so on.

The clinical applications were performed such as RI angiography of the heart and the aorta, the multi-directional view analysis of myocardio and the function parameter calculations.

The two camera detectors were set at a right angle each other and the morphological diagnosis were done.

Compared with the X-ray biplane method, RI method was easier to do and more safety.

The myocardio images and their movements were observed using ECG gated images, and also EF, CO and other parameter were calculated.

The biplane images discribed the defects of the wall well and could offer the useful informations.

To determine the best angle for diagnosis, the data were taken and compared in the various detector angles.

LAO projection was selected for CO measurement by the gated method and RAO was selected for RCG method.

Three dimensional images were computed using ECG gated biplane images. They were constructed by the ellipe planes which piled up along with the long axis. The ellipes were calculated as follows. First, the long axis were set on the same cardiac phase images from both directions, then the slice planes were determined, measured the short axis lengths in each slice plane, finally the ellipes were calculated using the measured short axis lengths.

When the three dimensional images were displayed on the CRT, they were compensated the fuctors of the gradients of the long axises and the view point.

The cine display of them was very unique and useful to observe the wall motion.