

288

USEFULNESS AND CLINICAL APPLICATION OF RE-STANDARDIZATION OF CIRCUMFERENTIAL PROFILE CURVE IN QUANTITATIVE ANALYSIS OF MYOCARDIAL SPECT SHORT-AXIAL IMAGES. T.Uehara, T. Nishimura, K.Hayashida, M.Hayashi, T.Hirano*, M.Hosoba* and R.Ban*. National Cardiovascular Center, Suita, Osaka and Shimazu Corporation*, Kyoto.

The lateral infarction was sometimes underestimated in the quantitative circumferential profile analysis of myocardial SPECT short-axial images. The cause of this underestimation and the re-standardization method to correct this underestimation and that clinical application were evaluated. The results were as follows:

1. The cause of the underestimation of the lateral infarction was that the profile curve was drawn as a %-standardized relative curve and that the normal range was not uniform in each area. Therefore, the underestimation was occurred mostly in the basal lateral area.
2. The greatest application of re-standardization was left circumflex coronary artery lesions which supplied the basal lateral area of myocardium. The re-standardization was also useful for the diagonal coronary artery lesion, but the diagonal branch supplied the apical lateral area and the correction effect was not so much as the left circumflex coronary artery lesions.

289

INVESTIGATION OF NEW INFARCT MAP OF Tl-201 SPECT. S.Yumikura, K.Imai, T.Ando, M.Moriuchi, N.Kaseda, S.Saito, Y.Ozawa, M.Hatano and K.Kamata. Nihon University, Department of 2nd Internal Medicine and Radiology. Tokyo

To evaluate the extent of myocardial infarction, we investigated the guideline of circumferential profile analysis of Tl-201 SPECT. The left ventricle was sliced to six short axis segments from apex to basis, and circumferential profile analysis was done in each segments. Infarct size was hypothesized as the area under the 100%, 90%, 80% and 70 % of lower limit of circumferential profile. In phantom-examination, artificially prepared infarct area value was more close to the infarct area under the 80% of lower limit than others. Clinically the infarct area under the 80% of lower limit showed good correlation with left ventricular EF, Σ -CPK, peak-GOT and peak-LDH. The infarct area was overestimated by the guideline under 100 % or 90% of lower limit. The 80% of lower limit was considered the best guideline of circumferential profile analysis as the infarct, and this method was very useful and favorite in such a clinical setting.

290

THREE DIMENSIONAL DISPLAY -- STEREO VIEW -- FOR A HEART IMAGE WITH SINGLE PHOTON EMISSION COMPUTED TOMOGRAPHY (SPECT). H.Toyama, M.Akisada, H.Murata and H.Matsuda. Institute of Clin. Med., Tsukuba Univ., Ibaragi and Toranomon Hospital, Tokyo.

A method for three dimensional display of the gated cardiac pool and myocardial images with SPECT was developed for clinical use. A contour line of the heart was detected from the short axial image and smoothed with Fourier function. After these contour lines were recorded into the disk as SL-file, three dimensional display called STEREO VIEW (STV) was performed on the color CRT. For a cardiac pool image, wire frame and shadow display was adopted using SL-file. For a myocardium, gray scale display was performed using SL-file and CL-file. CL-file is generated from the counts in the sector region. Surrounded region by a contour line in each sliced short axial image was divided into 51 sectors. Gray scale was determined from the radionuclide distribution, wash out rate and their difference values from the normal values which were calculated as the mean values from ten normal cases. In all types of STV display, superimpose of ED and ES images, simultaneous display of LV and RV, rotation, clining and arbitrary view of display are available. Cinematic display is also possible. In conclusion, STV display is characterized by following merits: it is easy to diagnose the extent and degree of ischemia without special training due to depicting the heart with reality.

291

A NEW QUANTITATIVE ANALYSIS FOR THALLIUM MYOCARDIAL SPECT IMAGE -STEREO VIEW METHOD- H.Matsuda, H.Murata, S.Nishimura, K.Katou and H.Toyama. Toranomon Hospital and Tsukuba University.

We have developed a stereo view (STV) display method which enables more quantitative and simple diagnosis on the analysis of thallium myocardial SPECT images. The STV was constructed three dimensionally using outer edges of 10 short axial slices from apex to base of LV. Each slice was divided into 51 sectors, therefore LV wall is divided into 510 segments. Normal range in mean count and wash out rate (W) of each segment was estimated from values of 11 normal controls. Normal range of W in each segment was uneven, that is septal and apical values were higher than those of anterior and basal sides. The STV was applied on 60 cases with angina pectoris and was compared with the results of Bull's eye method. STV made it possible to discriminate the ischemic lesion more precisely. Furthermore, diagnostic accuracy of STV for ischemia was higher than that of Bull's eye method because normal ranges in 510 segments had different values at each segment in STV method.