202

EVALUATION OF ABSORPTION CORRECTION IN RECONSTRUCTION OF MYOCARDIAL ECT IMAGES AND RECOGNITION OF NORMAL PATTERN IN CLINICAL CASES. Y. Yamada, T. Nishimura, T. Uehara, M. Hayashi, H. Oka, K. Tanaka, H. Yokoyama and T. Kozuka. National Cardiovascular Center. Osaka.

In reconstruction of myocardial ECT images, we analyzed quantitatively the change of normal pattern by using the absorption correction or not and changing the value of μ (linear absorption coefficient) in cardiac phantom and normal clinical 10 cases. We used the simple expression $\mu\ell/(1-e^{-\mu\ell})$ as absorption correction factor. As the result, we found the degree of attenuation in each segument of myocardium and the limit of this method of correction. Our result is that absorption correction is useful to obtain uniform myocardial tomograms but the rise in random uncertainty coinciding with absorption correction may disturb correct diagnosis.

203

COMPARATIVE STUDY OF Tl-201 EMISSION MYOCARDIAL TOMOGRAPHY WITH DUAL 360° AND SINGLE 180° DATA COLLECTION. M. Hayashi, Y. Yamada, T. Uehara, H. Oka, K. Tanaka, T. Nishimura and T. Kozuka. National Cardiovascular Center. Osaka.

Myocardial ECT images, obtained with dual 360° and single 180° data collection in 10 clinical normal cases, were analyzed by quantitative circumferential profile method. Both of the profile curves had almost same count rate pattern, but the deviation at low count areas was larger in single 180° data collection. In the experiment of myocardial phantom in air or in Tl-201 solution background, the contrast of myocardial ECT image of single 180° data collection was higher than that of dual 360° data collection. Perfusion defect of inferior wall of short-axial ECT image was shown larger and deformed in single 180° data collection.

204

APPLICATION OF SINGLE-PHOTON EMISSIN COMPUTED TOMOGRAPHY WITH DUAL SCINTILLATION CAMERAS FOR THALLIUM-201 MYOCARDIAL IMAGING (Study on Quantitative Analysis). H.Maeda,K.Takeda, T.Nakagawa,N.Yamaguchi,T.Kitano,M.taguchi, *M.Kakegawa and *S.Matsui, Mie University School of Medicine. Mie. *Toshiba Corporation Nasu.

In ^{201}Tl myocardial single-photon emission computed tomography(SPECT), it is difficult to compensate attenuation of photons by tissue using only one attenuation coefficient because there are various tissues having different attenuation coefficients, such as heart, lung, spine and thoracic wall. In this study, a new method for attenuation compensation and its quantitative analysis in ^{201}Tl myocardial SPECT were investigated. Projection data of a myocardial phantom containing ^{201}Tl(1μCi/ml) were acquired with sampling angular interval of 4 degrees and total acquisition time of 6 minutes, and were reconstructed using a convolution method with Shepp and Logan's filter function. After compensating attenuation for ^{201}Tl transaxial images using four attenuation coefficients, the obliue angled tomograms were reconstructed. In the circumferential profile analysis for these images, the coefficients of variance ranged from 3.8% to 5.4 % with attenuation compensation and from 9.7 % to 15.8% without it. It appears that camera-based SPECT systems will be useful in quantitative evaluation of ^{201}Tl myocardial SPECT although the acurracy is still limited by various factors.

205

DIAGNOSIS OF ISCHEMIC HEART DISEASE BY TL-201 MYOCARDIAL EMISSION COMPUTED TOMOGRAPHY USING ROTATING DUAL-HEAD GAMMA CAMERA. M.Hamada,Y.Futagami,T.Konishi,T.Nakano,H. Takezawa,K.Takeda*and H.Maeda*. 1st Department of Internal Medicine and*Department of Radiology, Mie University School of Medicine Tsu, Japan

Tl-201 single photon emission computed tomography(SPECT) was performed in 57 patients(pts.) with ischemic heart disease(IHD) (47 infarction and 10 angina pts.) and 10 normal subjects. Using rotating dual-head gamma camera system(TOSHIBA GCA-70AS), conventional planar imaging(PL) and SPECT data acquisition were done at peak stress of sitting graded exercise by ergometer and 3 hrs. after iv injection of 2.5 mCi of Tl-201. SPECT data were collected for total sampling time of 6 minutes with a sampling interval of 4 degrees. Transaxial tomographic(TA) image was reconstructed by convolution method and thereafter, sagittal(SA) and coronal(CO) images were made. The oblique-angle tomographic imaging along the LV long axis was done according to Borrello's method. Sensitivity for detection of IHD by SPECT(56/57,98%) was significantly higher than PL(49/57,86%, P 0.05). Also, individual affected vessel was precisely detected by corresponding to hypoperfusion segments of SPECT image.

Thus, SPECT improved the detectability of IHD compared to PL and was considered to be available in clinical use.

Presented by Medical*Online