COMPARISON OF 180° AND 360° DATA COLLECTION TECHNIQUE FOR EVALUATING THE UNIFORMITY OF TL-201 SPECT IMAGES OF CARDIAC PHANTOM.

M. Taguchi, K. Shimabukuro, Y. Nakabeppu, K. Shirono, N. Nakajo, A. Okada, T. Kiku and S. Shigeyasu. Department of Radiology, Faculty of Medicine, Kagoshima University, Kagoshima.

The purpose of this experimental study is mainly to find the difference in uniformity of TL-201 myocardial SPECT images between 180° and 360° data collection technique. SPECT images were obtained without attenuation correction and then three short axis images (basal, medial, and apical sections) were selected for the quantitative analysis using circumferential profile method. Although, there was no significant difference in uniformity of SPECT images between 180° and 360° technique, a decreased activity area was sometimes noted in 180° data collection image, but not in 360° image. This artificial decreased activity area may result in a false positive in a clinical setting. In addition locating the defect (1 cm and 2 cm diameter) on the anterior wall of the phantom, it could be detected with both techniques. Therefore, we concluded that the 360° data collection method is appropriate for TL-201 studies to avoid a false positive finding.


Stress TL SPECT has improved scintigraphy to detect and localize myocardial ischemia. Evaluation of regional myocardial perfusion from stress/redistribution by visual interpretation is in need of objective and quantitative analysis. This paper describes the semiquantitative analysis converting 3-dimensional data into 2-dimensional representation (CCD). Analysis with CCD was compared with visual interpretation (VA) on clinical basis. Patients studied were 37 with angina pectoris (MI-1), 32 with myocardial infarction (MI) and 19 normal. Sensitivity for detecting angina pectoris with CCD and VA was 76% and 79%, respectively, and for detecting MI, 97% and 94%, respectively. Specificity for detecting both angina pectoris with CCD and VA was 76% and 73%, respectively, and for detecting MI, 7% and 94%, respectively. Specificity for detecting both angina pectoris and MI was 84% with CCD and 79% with VA. In case of RCA/CX disease, sensitivity with CCD was 61% and 56% with VA, and specificity was 61% with CCD and 78% with VA. In case of RCA/CX disease, sensitivity with CCD was 78% with VA, and specificity with CCD was 60% and 75% with VA. Sensitivity in the case of multiple vessel disease was low in both method. In conclusion, analysis with CCD was almost equal to that with VA, and semiquantitation by CCD is useful for quantitative and objective assessment of myocardial vessel disease.