

38

The Clinical Value of Measurement of the Left Ventricular Transient Ischemic Dilatation in Identifying the Extent and Severity of Coronary Artery Stenosis

Y. Li, Y. Fan, C. Han, D. Li, A. Ma

The First Clinical College, China Medical University, Shenyang, China

Purpose: To assess the efficacy of measurement of left ventricular transient ischemic dilation (TID) with Tl-201 scintigraphy in identification of severe and extensive coronary artery disease. **Methods:** Stress-redistribution Tl-201 scintigraphy was performed in seventy cases: 15 cases excluded coronary artery disease, 5 with $\leq 50\%$ luminal diameter narrowing of coronary artery (n=20, group 1); 29 with one $\geq 75\%$ coronary vessel stenosis (group 2); 21 with two or three $\geq 75\%$ coronary stenosis (group 3). By validated automatic method for measuring left ventricular volume from stress and delayed myocardial SPECT images, the TID ratio was measured. **Results:** The TID ratios in group 1, group 2, and group 3 were 0.89 ± 0.07 , 0.92 ± 0.11 , 0.98 ± 0.09 , respectively. There was no significant difference of the values between group 1 and group 2 ($t=0.2$, $P>0.05$). But there was significant difference between group 1 and group 3 ($t=3.50$, $P<0.001$). Abnormality for the TID ratio was defined as $>$ mean value plus 2s from group 1. The specificity of TID for identification of severe and extensive coronary artery disease was 95%. In patients with severe stenosis, the sensitivities were 13.8% for one-vessel disease, 14.3% for two-vessel, 42.9% for three-vessel, 23.8% for multivessel and 18.0% for all. In the aspect of the abnormal perfusion extent (numbers of segments), the segments in patients with abnormal TID ratio (n=10) was 51.1% in the total segments, and 20.2% in patients without abnormal TID ratio (n=45). There was significant difference between them ($\chi^2=36.59$, $P<0.01$). Summed stress scores in patients with abnormal TID ratio was 11.81 ± 6.50 , and 4.12 ± 3.21 in patients without abnormal TID ratio ($t=3.64$, $P<0.01$). There were significant correlations between the numbers of abnormal perfusion segments and TID ratio of the left ventricle ($r=0.56$, $P<0.0001$), and between summed stress scores and TID ratio of the left ventricle ($r=0.59$, $P<0.0001$). **Conclusions:** TID ratio measurement is a very simple, convenient and objective method in identifying severe and extensive coronary artery disease.

39

Reproducibility of Gated Myocardial Perfusion SPECT for the Assessment of Myocardial Function: Comparison with Thallium-201 and Technetium-99m-MIBI

In Young Hyun*, Jun Kwan¹, Keum Soo Park¹, Wonsick Choe, Woo Hyung Lee

Department of Nuclear Medicine and Internal Medicine¹, Inha University College of Medicine, Incheon, Korea

Objectives: We compared the reproducibility of ^{201}Tl and $^{99\text{m}}\text{Tc}$ -sestamibi (MIBI) gated SPECT (g-SPECT) for the assessment of myocardial function. **Methods:** G-SPECT acquisition for the assessment of myocardial function was repeated in the same position in 34 patients who received ^{201}Tl and in 31 who received $^{99\text{m}}\text{Tc}$ -MIBI. The quantification of enddiastolic volume (EDV), endsystolic volume (ESV) and ejection fraction (EF) on ^{201}Tl and $^{99\text{m}}\text{Tc}$ -MIBI g-SPECT were processed independently using Cedars quantitative g-SPECT software. The reproducibility of the assessment of myocardial function on ^{201}Tl g-SPECT was compared to that of $^{99\text{m}}\text{Tc}$ -MIBI g-SPECT. **Results:** Correlation between the two measurements for volumes and EF was excellent by the repeated g-SPECT studies of ^{201}Tl ($r = 0.928$ to 0.986 ; $p < 0.05$) and $^{99\text{m}}\text{Tc}$ -MIBI ($r = 0.979$ to 0.997 ; $p < 0.05$). However, Bland Altman analysis revealed the 95% limits of agreement (2 SD) for volumes and EF was tighter by repeated $^{99\text{m}}\text{Tc}$ -MIBI g-SPECT (EDV: 14.1 ml, ESV: 9.4 ml and EF: 5.5%) than by repeated ^{201}Tl g-SPECT (EDV: 24.1 ml, ESV: 18.6 ml and EF: 10.3%). The root mean square (RMS) values of the coefficient of variation (CV) for volumes and EFs were smaller by repeated $^{99\text{m}}\text{Tc}$ -MIBI g-SPECT (EDV: 2.1 ml, ESV: 2.7 ml and EF: 2.3%) than by repeated ^{201}Tl g-SPECT (EDV: 3.2 ml, ESV: 3.5 ml and EF: 5.2%). **Conclusion:** $^{99\text{m}}\text{Tc}$ -MIBI provides more reproducible volumes and EF than ^{201}Tl on repeated acquisition g-SPECT. $^{99\text{m}}\text{Tc}$ -MIBI g-SPECT is the preferable method for the clinical monitoring of myocardial function.