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Right Lateral Position Versus Supine Technetium-99m-MIBI Myocardial Spect: A Method to Decrease Artificial of Inferior Wall Defects

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Purpose: This study evaluated the ability of right lateral (RL) SPECT imaging with Tc-99m-MIBI to resolve inferior wall count attenuation and improve CAD diagnostic accuracy. **Method:** The RL position was evaluated instead of the prone position in 45 patients among the 155 consecutive patients with myocardial SPECT studies. Thirty-eight patients had low likelihood of CAD, seven patients had inferior (and posterior) wall infarction. RL SPECT images were immediately obtained after supine images. Thirty-two projection images were acquired over a 180° arc from 45° right anterior oblique to 45° left posterior oblique in both supine and RL images. Three physicians interpreted the images. Regional myocardial counts were assessed by quantitative polar map analysis. **Results:** Inferior wall defects were found in 51 patients (32.9%) among the 155 consecutive patients myocardial SPECT imaging in supine position. Thirty-two patients (62.7%, 32/51) had low likelihood of CAD, 19 patients (37.3%, 19/51) had inferior (and/or posterior) wall infarction or ischemia. In 32 patients with low likelihood of CAD, higher inferior myocardial counts (100%, 32/32) were observed in the RL than in supine images. Quantitative analysis confirmed these findings (72.3 ± 7.1 vs 83.6 ± 7.8 , $p < 0.01$). Whereas new defects in other regions were found in 10 of 32 patients (1 in apex, 9 in anterior wall). In 7 patients with inferior wall infarction, there were no increase of counts in inferior wall (100%, 7/7), while inferior wall defects was more apparent in 1 patient. Among 6 patients with low likelihood of CAD and normal region count in inferior wall in supine imaging, 4 patients had no apparent change and 2 patients had mild increase in inferior wall counts in RL imaging. **Conclusion:** If the inferior wall defects were found in the routine supine images, RL position SPECT imaging could markedly improve the CAD diagnostic accuracy and it was more tolerable than prone position. But new artifacts in anterior or apex region could be seen in some patients, so it couldn't substitute the routine supine SPECT imaging.

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The Effect of Attenuation Correction on Enhancing Accuracy of Myocardial Tomography with Tc-99m-MIBI

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The purpose of this study was to assess the efficacy of attenuation-corrected (AC) myocardial tomography in detecting coronary artery disease (CAD) and viable myocardium. **Methods:** 16 normal and 25 patients with angiographic coronary disease were performed by myocardial tomography with Tc-99m-MIBI. Both AC and non-attenuation-corrected (NC) images were generated. Of 25 patients with CAD, 9 underwent PTCA within 1 week after myocardial tomography. Left ventricular (LV) myocardium was divided into 9 segments and segmental activity was expressed by the percentage (%) of LV peak activity. **Results:** In normal group, NC showed a significant inhomogeneity of left ventricular myocardial activity. The difference in distribution activity between anterior and inferior basal segment was 26.9% in NC and only 5.6% in AC. In patients with CAD, the sensitivity in detecting LAD/LX disease increased from 77%/58% (NC) to 91%/89% (AC) ($p < 0.05$). The specificity in detecting RCA disease increased from 67% (NC) to 88% (AC) ($p < 0.05$). In detecting viable from infarcting myocardium, the results of AC and NC was similar while the segmental distribution of MIBI activity was less than 30% of peak. However, the diagnostic accuracy of AC imaging for detecting viable myocardium was higher than that of NC ($p < 0.05$) for the segmental activity in the range of 30%-75%, compared with the result of improved wall motion after PTCA. The difference between AC and NC in detecting viable myocardium was in inferior, inferior basal and septal segments. **Conclusion:** Tc-99m-MIBI myocardial tomography with AC significantly improved the quality of image and it is important value in early diagnosing CAD and detecting viable myocardium.