

Dobutamine Tc-99m furifosmin SPECT in detection of coronary artery disease: Evaluation of same day, rest-stress protocol

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The purpose of this study was to evaluate the feasibility and diagnostic accuracy of same day rest-stress myocardial perfusion SPECT (MP SPECT) protocol by using technetium-99m (Tc-99m) furifosmin in conjunction with dobutamine stress test in subjects in whom coronary artery disease (CAD) had been proven or excluded at coronary angiography (CA).

The study group consisted of 25 patients (8 female and 17 male with a mean age of 53.04 ± 8.56 yrs) unable to perform treadmill exercise or unsuitable for pharmacologic vasodilator stress testing. Ten mCi (370 MBq) of Tc-99m furifosmin was injected intravenously at rest. Sixty min after injection, planar and SPECT images were acquired. One hour later all patients underwent dobutamine stress test. At the peak stress, 20 mCi (740 MBq) of Tc-99m furifosmin was injected. Sixty min after stress dose injection, planar and SPECT images were acquired. Rest-stress planar and SPECT data were evaluated by using visual and quantitative analysis. Heart to adjacent organ (Heart/Lung; H/Lu and Heart/Liver; H/Li) activity ratios were calculated from anterior planar images by using regions of interest (ROI). SPECT data were interpreted by using 20 segment-5 point scoring system from short axis and vertical long axis slices. The results of rest-dobutamine stress Tc-99m furifosmin MP SPECT were compared with CA results.

There were statistically significant differences between H/Lu and H/Li ratios at rest and stress conditions. Heart/adjacent organ activity ratios were similar and significant statistical difference could not be found between CA positive and CA normal patients.

Sensitivity, specificity and accuracy for Tc-99m furifosmin SPECT study were calculated as 90%, 80% and 84% for left anterior descending (LAD), 87%, 94% and 92% for left circumflex (LCx) and 67%, 86% and 80% for right coronary artery (RCA), respectively. Overall sensitivity, specificity and accuracy were calculated as 83%, 87% and 85%, respectively.

According to the results obtained in this study, it may be concluded that same day rest-dobutamine stress Tc-99m furifosmin SPECT protocol is a feasible and accurate technique in the evaluation of CAD, especially in patients unable to perform treadmill exercise or unsuitable for pharmacologic vasodilator stress testing.

Key words: Tc-99m furifosmin, dobutamine, myocardial perfusion SPECT, coronary artery disease