

Post-Stress LV Dilation: The Effect of Imaging Protocol, Gender and Attenuation Correction.

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Objectives: The objective of this study was to assess the effects of imaging protocol, gender and attenuation correction (AC) on quantitatively measured post-stress LV volume ratios.

Methods: Normal ranges of post-stress LV dilation were determined in 100 (50 male) low likelihood normal volunteers or pts using both the dual isotope rest Tl-201 / stress Tc-99m sestamibi and the same day stress / rest Tc-99m sestamibi protocols. Imaging was performed using modified Picker 3000XP SPECT systems equipped for simultaneous transmission / emission imaging and AC using the Michigan method. Reconstructed image data was quantitatively analyzed for perfusion and volumes using 4D-MSPECT. The normalcy of these results were subsequently tested in 115 consecutive low likelihood normal pts referred for stress perfusion imaging.

Results: Stress/rest (S/R) LV volume ratios were determined in male and female pts and the both combined using the dual isotope and the same day sestamibi protocols. Uncorrected (NC) and AC data were analyzed separately. There were no significant differences between genders in regard to normal mean values and ranges whether data was NC or AC. However, there were significant differences in the normal ranges between the dual isotope and same day sestamibi protocols; the upper limit of normal for the dual isotope was 1.23 and for the same day protocol was 1.14 (p<0.05). In a population of 115 consecutive low likelihood pts, the normalcy determined for this method was 98%.

Dual-Isotope S/R	Male	Female	Composite
NC	1.00±0.09	1.01±0.12	1.01±0.11
p=NS AC	1.02±0.09	1.03±0.11	1.02±0.10
Sestamibi S/R			
NC	0.96±0.07	1.00±0.07	0.98±0.07
p=NS AC	0.99±0.08	1.00±0.06	1.00±0.07

Conclusions: The normal ranges of quantitative stress / rest LV volume ratios are unaffected by gender and attenuation correction. However, there were modest but significant differences in the upper limit of normal based on imaging protocol.