

Gender Specific Differences in Normal Ranges of Cardiac Functional Parameters from Gated SPECT.

EP Ficaró, JN Kritzman, GM Stephens, JR Corbett.
University of Michigan Health System, Ann Arbor, MI.

Objectives: The objective of this study was to determine the normal ranges of cardiac functional parameters from gated SPECT perfusion studies and determine if there are gender specific differences in these parameters using 4D-MSPECT.

Methods: LV functional parameters were determined in 60 low-likelihood normals (30 female) (age 47.3 ± 9.9 yrs) using 16 frame gated Tc-99m sestamibi SPECT. Reconstructed image data was quantitatively analyzed for perfusion, volumes and cardiac outputs using 4D-MSPECT. LV volumes and cardiac outputs are reported as values indexed to body surface area (BSA, Dubois equation): end-diastolic volume index (EDVI), end-systolic volume index (ESVI) and cardiac index (CI). $CI = (EDVI - ESVI) \times HR$ during imaging. Comparisons displayed are between genders.

Results:

	EF	EDVI	ESVI	BSA	HR	CI
Combined	68.3 ± 6.7	55.4 ± 15.1	18.2 ± 7.9	1.90 ± 0.21	67.9 ± 9.0	2.51 ± 0.56
Male	64.4 ± 5.6	64.6 ± 14.7	23.2 ± 7.4	2.03 ± 0.16	66.3 ± 7.7	2.73 ± 0.61
Female	72.2 ± 5.4	46.3 ± 8.5	13.2 ± 4.4	1.77 ± 0.18	69.6 ± 10.0	2.29 ± 0.39
p value	<0.0001	<0.0001	<0.0001	<0.0001	NS	<0.01

There was a good correlation between CI and EDVI with an $r=0.71$, $y=0.26x+1.07$. There was also a good correlation between CI and EDV with an $r=0.68$, $y=0.01x+1.38$ and $p<0.01$. Although there was no difference in heart rates between genders, there were significant differences in every other variable measured. Although EFs were higher in females, LV volumes and CIs were lower.

Conclusions: There are significant gender related differences in cardiac functional parameters measured with gated SPECT perfusion studies consistent with those previously reported by cardiac MRI and echocardiography. The higher EFs seen in females appear to be a physiologic response to their smaller ED volumes as there is a concordant reduction in cardiac indices without corresponding increases in heart rate.