DSPECT-Specific Normative Limits for LV Measurements: A New Approach to Derivation

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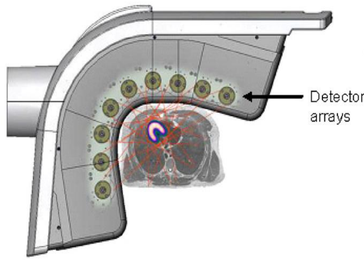
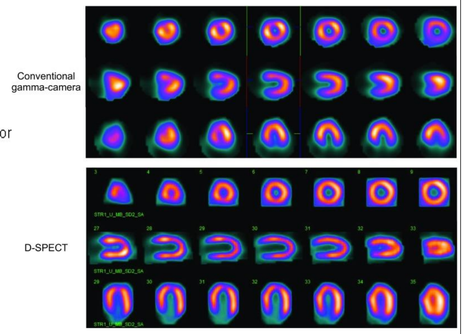
OBJECTIVE

- To derive normative values for left ventricular size and function for the DSPECT camera

BACKGROUND

- Normative values for LV size and function by gated SPECT myocardial perfusion imaging are derived from conventional Anger cameras (ASPECT).
- There is increasing use of solid-state gamma cameras which have a higher spatial resolution and utilize unique reconstruction algorithms.
- However, normative values of LV size and function specific for solid state imaging are not available.
- Organ donors for transplant are unique among the stress testing population in that they are selected based on the absence of cardiac diseases. Thus, they are an excellent cohort for the derivation of normative values and avoid the limitations of the traditional approach of using subjects with <5% probability of cardiac diseases.





METHODS

- **Population:**
  - 92 healthy transplant (Liver or Kidney) donors (39% males) without cardiac disease or medication history.
- **Timeline:**
  - All studies were performed on a D-SPECT camera (Spectrum Dynamics, Hiafa, Israel) at UPMC Presbyterian over a 3-year period (2017-2020).
- **Measurements:**
  - Ejection fraction (EF), left ventricular end-diastolic volume (LVEDV) and left ventricular wall volume (LV wall) measurements were collected from post-stress supine images using QGS software.
- **Analysis:**
  - LVEDV and LV wall measurements were indexed by BSA for each subject to yield indexed LVEDV (LVEDVi) and LV wall values.

RESULTS

- The mean age (± 2 SD) was 54.4 ± 15.3 years for all subjects.
- The normative values by gender are displayed in Table 1.
- Published normative values by gender for the ASPECT camera are shown in Table 2.

TABLE 1

Gender	EF (%)*	LVEDV (ml)*	LVEDVi (ml/m^2)*	LV Wall (ml)*	Indexed LV Wall (ml/m^2)*
Female (56)	77.2 ± 14.1	67.0 ± 32.2	38.3 ± 17.2	95.9 ± 26.0	55.0 ± 13.8
Male (36)	70.0 ± 14.7	99.6 ± 51.6	48.1 ± 25.9	112.0 ± 48.8	54.1 ± 24.6

Table 1: EF and volumetric measurements obtained on DSPECT camera
*values are presented by mean ± 2 standard deviations

TABLE 2

Gender	EF (%)*	LVEDV (ml)*	LVEDVi (ml/m^2)*
Males	59 ± 8	95 ± 27	49 ± 13
Females	67 ± 8	64 ± 19	38 ± 11

Table 2: Published ASPECT derived normative values in Sharir et. al. 2006
*values are presented by mean ±2 standard deviations

Conclusion

- A healthy donor population may be a more suitable cohort for the derivation of normative values than patients with <5% probability of CAD.
- We present normative values of LV size and function specific for DSPECT camera derived from such population.

References

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