

## **Automatic Segmental Scoring of Myocardial Wall Thickening and Motion: Validation of a New Semi-Quantitative Algorithm.**

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**Objectives:** Segmental wall thickening and motion scores are useful measures of regional ventricular function and myocardial viability. The purpose of this study was to validate a new algorithm for automatic semi-quantitative scoring of myocardial thickening and motion.

**Methods:** Automatic segmental scoring of myocardial wall thickening and motion was performed using 4D-MSPECT. The LV was segmented using a standard 17 segment model and each segment was scored from 0 (normal) to 3 (no thickening) and from 0 (normal) to 4 (dyskinetic motion). A population of 109 pts (age  $56.7 \pm 13.1$  yrs; 72 male) with known or suspected CHD or age matched low likelihood normals was studied. Each patient underwent stress perfusion imaging using a same day or two day  $^{99m}\text{Tc}$  Sestamibi protocol. Automatic segmental and summed computer scores were compared with the consensus scores from two experts. A total of 1853 segments were scored by each observer for both thickening and motion.

**Results:** The study population of 109 pts included 86 with angiographic coronary disease; most with moderate to severe defects. There was perfect agreement between automatic segmental thickening scores and expert scores in 1120 segments (60.4%) and agreement within  $\pm 1$  grade in 1683 segments (90.8%). There was perfect agreement between automatic segmental motion scores and expert scores in 1264 segments (68.2%) and agreement within  $\pm 1$  grade in 1702 segments (91.9%).

**Conclusion:** Automatic computer generated semi-quantitative segmental LV myocardial wall thickening and wall motion scores may be determined with a high degree of agreement with expert determined interpretations.