

## Automatic Assessment of Calcium Score from Contrast-Enhanced 256-Row Coronary CT Angiography

*Rubinshtein, Ronen<sup>1</sup>; Eilot, Dov<sup>2</sup>; Halon, David A.<sup>1</sup>; Goldenberg, Roman<sup>2</sup>; Gaspar, Tamar<sup>3</sup>; Lewis, Basil S.<sup>1</sup>; Peled, Nathan<sup>3</sup>*

*<sup>1</sup>Lady Davis Carmel Medical Center, Department of Cardiovascular Medicine, Technion-IIT, Haifa, Israel; <sup>2</sup>Rcadia Medical Imaging, NA, Haifa, Israel; <sup>3</sup>Lady Davis Carmel Medical Center, Radiology, Technion-IIT, Haifa, Israel*

**Background:** The coronary artery calcium score (CS), an independent predictor of cardiovascular events, is performed as a stand-alone non-enhanced CT scan (CSCT) or as an additional non-enhanced procedure prior to a contrast enhanced coronary CT angiography (CCTA). The purpose of our study was to evaluate the accuracy of a fully automatic tool for computing CS from CCTA.

**Methods:** 136 consecutive symptomatic pts (age 59±11 yrs, 40% female) without known CAD who underwent both 256-row CSCT and CCTA were included. Original scan reconstruction (slice thickness) was maintained (2.5mm for CSCT and 0.67 mm for CCTA). CS was computed from CCTA by an automatic tool (COR Analyzer, Rcadia) and compared to CS results obtained by standard assessment of non-enhanced CSCT (HeartBeat CS, Philips). We also compared both methods for classification into 5 commonly used CS categories (0, 1-10, 11-100, 101-400, >400AU).

**Results:** All scans were of diagnostic quality. CS obtained by the COR Analyzer from CCTA classified 111/136 (82%) of pts into identical categories as CS by CSCT and 24 of remaining 25 into an adjacent category (Table). Overall, CS values from CCTA showed high correlation with CS values from CSCT (Spearman rank correlation = 0.95, p<0.0001).

**Conclusions:** 1. CS values automatically computed from 256-row CCTA were highly correlated with standard CS values obtained from non-enhanced CSCT. 2. Our results suggest that CS can be obtained directly from CCTA obviating the need for an additional scan.

CS	CSCT CS 0	CSCT CS 1-10	CSCT CS 11-100	CSCT CS 101-400	CSCT CS>400
CCTA CS 0	24	4	0	0	0
CCTA CS 1-10	5	6	3	0	0
CCTA CS 11-100	1	1	29	2	0
CCTA CS 101-400	0	0	5	26	2
CCTA CS>400	0	0	0	2	26