



## **Computer-aided Analysis of 64-slice Coronary Computed Tomography Angiography: A Comparison with Manual**

**Daubert M,<sup>1</sup> Malhotra V,<sup>2</sup> Ferraro S,<sup>1</sup> Goldenberg R,<sup>3</sup> Kam M,<sup>1</sup> Wu H,<sup>1</sup> Kam D,<sup>1</sup> Minton A,<sup>1</sup> Poon M.<sup>1</sup>**

<sup>1</sup>Stony Brook University Medical Center, Stony Brook, New York, United States; <sup>2</sup>Cardiac Study Center, Tacoma, Washington, United States; <sup>3</sup>Rcadia Medical Imaging, Haifa, Israel.

**Introduction:** Coronary computed tomography angiography (CCTA) is increasingly used for the assessment of coronary artery disease (CAD) in symptomatic patients. To meet the increasing need for expert image interpretation, software applications have recently been developed to facilitate efficient and accurate analysis of CCTA. This study aims to evaluate the clinical applicability of computer-aided analysis (CAA) software for the detection of significant coronary stenosis on 64-slice CCTA in three patient populations with low (8%), moderate (13%), and high (27%) CAD prevalence.

**Methods:** Analysis was performed on 341 consecutive patients with appropriate clinical indications for 64-slice CCTA at 3 clinical sites in the United States. CAA software (COR Analyzer™ by Rcadia Medical Imaging, Haifa, Israel) performed automatic segmentation, tracking, and detection of significant coronary lesions (defined as the most severe lesion in each segment with >50% stenosis) by finding the best match between extracted features and a large dataset of interpreted studies. CAA results were then compared to the consensus manual interpretation of two experienced cardiologists. Data analysis was conducted on a per patient and per segment basis.

**Results:** The CAA per patient had a sensitivity of 100% across all three clinical sites. The specificity in the low, moderate, and high CAD prevalence populations was 64%, 41%, and 38%, respectively. The negative predictive value at the three clinical sites was 100%. The positive predictive value was 22%, 21%, and 38% for the low, moderate, and high CAD prevalence populations, respectively. The segmental analysis yielded results with a similar trend.

**Conclusions:** This study demonstrated both the high sensitivity and high negative predictive value of CAA for the evaluation of significant CAD on 64-slice CCTA across three populations with differing CAD prevalence. These results suggest that CAA can be used in clinical practice to facilitate the accurate detection and exclusion of significant CAD on 64-slice CCTA.