



2019- A-23- SCCT

Abstract 7: Assessment of Right Ventricular Function Using Cardiac Computed Tomography Measured Fractional Area Change

Ali A. Alsaad (MD)¹, Martin Gibbs (MD)², Oludamilola Oluleye (MD)³, Amit Pursnani (MD)⁴, Patricia Mergo (MD)⁵, Brian Shapiro (MD)⁵

¹ University of Chicago-Northshore University HealthSystem, Evanston, IL, USA

² University of Florida, Gainesville, FL, USA

³ Essentia Health, Fargo, SD, USA

⁴ NorthShore University HealthSystem, Evanston, IL, USA

⁵ Mayo Clinic, Jacksonville, FL, USA

Introduction: Right ventricular (RV) fractional area change (FAC) measured by transthoracic echocardiogram (TTE) is an excellent tool to assess RV function.

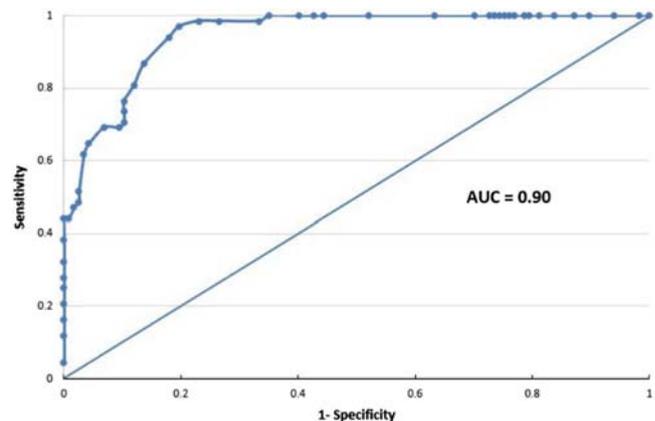
We sought to assess FAC utilizing cardiac computed tomography (CCTA) to diagnose RV dysfunction.

Methods: Patients who underwent multiphase ECG-gated CCTA and from January 2015 through December 2017 in a single center were included. Patients with at least mild RV dysfunction diagnosed both clinically and by TTE were compared to control group with no RV dysfunction. Both RV end-diastolic and end-systolic areas were measured in apical 4 chamber views. FAC was calculated using the formula $FAC = (\text{diastolic area} - \text{systolic area} / \text{diastolic area}) * 100\%$. TTE was performed within 3 months of the CCTA.

Results: A total of 211 consecutive participants were included, 11 of which were excluded due to gating artifacts. 63 patients had echo evidence of RV dysfunction as demonstrated by $FAC < 35\%$ and tricuspid annular plane systolic excursion < 1.6 mm. Baseline characteristics are shown in the Table. CCTA calculated $FAC < 30\%$ was predictive of RV dysfunction with an adjusted odds ratio = 37; 95% CI (16.9-62.3), $p = 0.001$. $FAC < 30\%$ had 97% sensitivity, 83% specificity and 84% accuracy in diagnosing RV dysfunction (Figure). Intra- and inter-observer agreement was acceptable, $\kappa = 0.78$ and 0.71, respectively.

Conclusions: In patients with suspected RV dysfunction, CCTA measured FAC may be used as an additional measurement to assess RV function.

Figure: Receiver operator characteristics (ROC) curve showing an area under the curve (AUC) of 0.90 if right ventricular fractional area change of 30% used as a cutoff to correlate with right ventricular dysfunction. Sensitivity = 97% and specificity = 83%.



<https://doi.org/10.1016/j.jcct.2018.12.011>

Available online 05 January 2019

1934-5925/ © 2019 Published by Elsevier Inc. on behalf of Society of Cardiovascular Computed Tomography