Journal of Cardiovascular Computed Tomography 13 (2019) S12

Contents lists available at ScienceDirect

Journal of Cardiovascular Computed Tomography

journal homepage: www.elsevier.com/locate/jcct

2019-A-28-SCCT

Abstract 12: Tricuspid Annular Plane Systolic Excursion for the Evaluation of Right Ventricular Function in Functional Cardiac CT Compared to MRI

Ryan Wilson (MB BCh)[1], Killian Newman (MD)[2], Asik Mohamed Ali (MD)[3], Anto Sedlic (MD)[3]

[1] *Ulster Hospital, Belfast, United Kingdom*
[2] *Kingston General Hospital, Calgary, ON, Canada*
[3] *Vancouver General Hospital, Vancouver, BC, Canada*

Introduction: Tricuspid annular plane systolic excursion (TAPSE) is a simple reproducible marker of right ventricular (RV) function that can be applied across multiple imaging modalities to quantify right ventricular ejection fraction (RVEF) and risk prediction. This study aims to compare ejection fraction estimated by TAPSE using cardiac CT and CMRI to the non-invasive gold standard, volumetric quantification of RVEF by cardiac MRI.

Methods: 31 patients with normal to severe ventricular dysfunction who had undergone functional cardiac CT angiogram and cardiac MRI within 12 months were retrospectively evaluated. RV volumes were processed with Siemens syngo.via automated cardiac analysis software for CT and manually processed by Simpson Method for MRI with Siemens syngo.via cardiac application. TAPSE for CT and MRI was measured on 4-chamber CINE images by two separate reference lines drawn at end- diastole and end-systole from the basal anterior mitral and basal lateral tricuspid valve leaflet insertion to the left and right ventricular apex respectively.

Results: MR-TAPSE moderately correlated with MR-RVEF, ($r = 0.57$, $p < 0.001$). CT-TAPSE was found to correlate moderately well with MR-RVEF ($r = 0.58$, $p < 0.001$) and CT-RVEF ($r = 0.63$, $p < 0.001$). Bland-Altman analysis repeated with various multiplication factors for CT-TAPSE and MR-RVEF determined a multiplication of 2.7 resulted in the lowest bias of 0.74%.

Conclusions: CT-TAPSE is an easily obtainable parameter of right ventricular function and is well correlated with CT-RVEF and MR-RVEF. It can function as a quick check to rapidly validate RVEF by CT volumetry and estimate MR-RVEF.

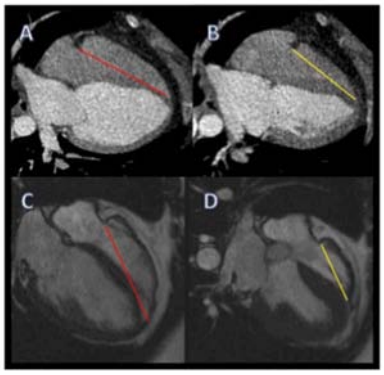

Figure 1. Four chamber views of a retrospectively reconstructed CT (A,B) and a steady-state free precession MRI sequence (C,D). Distance measurements between the lateral tricuspid ring and the right ventricular apex. The distance between the end-diastolic (A,C) and end-systolic measurements for respective modalities was defined as TAPSE. TAPSE, Tricuspid annular plane systolic excursion.

https://doi.org/10.1016/j.jcct.2018.12.016

Available online 05 January 2019