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 **Heart Failure****USE OF SPECKLE TRACKING ECHOCARDIOGRAPHY TO DETERMINE SEGMENTAL MYOCARDIAL SCAR BURDEN: INSIGHTS FROM THE TARGET STUDY**

ACC Moderated Poster Contributions

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Session Title: Heart Failure Physiology: Anemia, Pulmonary Hypertension and other Hemodynamic Stressors

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Authors: *Anna Kydd, Fakhar Khan, Liam McCormick, Deepa Gopalan, Munmohan Virdee, David Dutka, Addenbrooke's Hospital, Cambridge, United Kingdom, Papworth Hospital, Cambridge, United Kingdom*

Background: Presence and extent of viability in the region of the left ventricular (LV) lead tip is related to cardiac resynchronization therapy (CRT) response in patients with heart failure. Myocardial deformation imaging allows assessment of transmural myocardial scar and therefore viability. Published cut-off values of deformation parameters to predict transmural infarction defined by cardiac magnetic resonance imaging (CMR) vary. The TARGET study used segmental radial strain amplitude of <9.8% as a surrogate for transmural scar based on a strong negative predictive value for CRT response. The aim of this study was to derive cut-off values to distinguish transmural infarction, defined by CMR, using circumferential and radial strain for basal and mid myocardial segments in a cohort of patients from the TARGET study.

Methods: 19 patients referred for CRT underwent 2D speckle tracking echocardiography and CMR prior to device implantation. For each of the 6 LV myocardial segments, at the basal and mid level, peak systolic radial and circumferential strain were assessed (Vivid 7 GE Ultrasound system, EchoPac). Scar burden on CMR was quantified based on gadolinium enhancement (QMass, Medis). Extent of transmural infarction was defined for each corresponding myocardial segment and categorized as transmural infarction 50-100% hyperenhancement or non-transmural infarction 0-50% hyperenhancement.

Results: Heart failure aetiology was categorised as ischaemic (n=12) or non-ischaemic (n=7). Analysis of myocardial deformation parameters was possible in 218 segments (96%). Circumferential strain allowed distinction between non-transmural (n=203) and transmural infarction (n=15) with a sensitivity of 55%, specificity 67%, area under the curve 0.63, cut off value of -8.3%. Radial strain allowed distinction between non-transmural and transmural infarction with a sensitivity of 50%, specificity 68%, area under the curve 0.6, cut off value of 14.56%.

Conclusions: 2D speckle tracking allows discrimination between transmural and non-transmural scar. Reported cut off values are not consistent. New methods, such as 3D speckle tracking, may provide a more robust technique.