Abstract: 1200

Extracellular volume by cardiac magnetic resonance predicts outcomes in patients with severe aortic stenosis and normal left ventricular function who underwent aortic valve replacement

Authors:
S-J Park¹, SY Lee¹, SM Kim¹, EK Kim¹, SA Chang¹, SC Lee¹, SW Park¹, ¹Samsung Medical Center - Seoul - Korea Republic of,

Topic(s):
Cardiac Magnetic Resonance: Valve Disease

Citation:
European Heart Journal - Cardiovascular Imaging (2019) 20 (Supplement 1), i789

Background: Not much is known about the prognostic implication of diffuse myocardial fibrosis by noninvasive imaging in aortic stenosis (AS) after aortic valve replacement (AVR).

Purpose: The aim of this study was to evaluate whether native Extracellular volume (ECV) of the myocardium on cardiac magnetic resonance (CMR) could predict clinical events in patients with severe AS after aortic valve replacement AVR.

Methods: A prospective observational longitudinal study was performed in 71 consecutive patients with severe AS (67.4 ± 8.8 yrs, 46.5% male) who underwent AVR. CMR at 1.5T, including non and post-contrast T1 mapping for ECV, was carried out to define the amount of myocardial fibrosis. The AS patients were divided into 3 groups by the ECV value. Primary endpoint was a composite of all-cause death, hospitalization for heart failure (HF) and development of HF.

Results: Median follow-up was 4.6 yrs. There were 16 clinical events. Two deaths occurred in the patients in the highest ECV group. The total number of events also occurred more frequently in patients in the mid and highest ECV tertile group compared to the lowest ECV tertile group (3 yrs survival rate 0.911 vs. 0.923 vs. 0.727 for lowest, mid-, and highest ECV tertile groups). ECV is more closely related to prediction of the clinical outcome than native T1 or GLS (the hazard ratios (HR) were 1.13, 1.08, and 1.00 with p-values 0.18, 0.28, 0.56, respectively for ECV, GLS, and Native T1). The model with ECV had the highest c-index at 0.62.

Conclusion: High ECV by CMR is a novel, independent predictor of adverse outcome than native T1 or GLS in patients with severe AS who underwent AVR.