

POSTER PRESENTATION

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Myocardial injury and fibrogenesis: extracellular volume expansion is associated with elevated Galectin-3 levels in patients with myocarditis

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Background

Myocarditis subsumes a variety of entities, including diverse courses from complete healing to dilated cardiomyopathy with severe myocardial fibrosis. T1-mapping cardiovascular magnetic resonance (CMR) has the ability to quantify myocardial extracellular volume (ECV) as a surrogate of acute and chronic myocardial injury. Galectin-3 is an important mediator of fibrogenesis and contributes to adverse left ventricular (LV) remodeling. This study evaluated, if myocardial ECV expansion is linked to Galectin-3 levels in patients with myocarditis.

Methods

Galectin-3 blood levels were measured in 20 patients with myocarditis using a commercially available chemiluminescent microparticle immunoassay (ARCHITECT Galectin-3, Abbott Germany). T1 quantification was performed at 1.5 Tesla using the modified Look-Locker inversion-recovery (MOLLI) sequence before and 15 minutes after administration of 0.075 mmol/kg gadolinium-BOPTA. Global myocardial ECV was calculated from T1 maps generated by a dedicated plug-in written for the OsiriX software.

Results

Median Galectin-3 level was 17.4 ng/mL (interquartile range 13.2 to 20.5 ng/mL) and median global myocardial ECV was 29 % (interquartile range 26 to 33 %) in the study population. There was a significant correlation between Galectin-3 levels and global myocardial ECV ($r = 0.50$; $p < 0.05$). In contrast, no significant correlation was

found between Galectin-3 levels and LV end-diastolic volumes ($r = -0.08$; $p = \text{ns}$), LV end-systolic volumes ($r = 0.06$; $p = \text{ns}$), LV stroke volumes ($r = -0.33$; $p = \text{ns}$); LV ejection fractions ($r = -0.11$; $p = \text{ns}$), Troponin T levels ($r = 0.20$; $p = \text{ns}$) or NT-proBNP levels ($r = 0.28$; $p = \text{ns}$), respectively.

Conclusions

Myocardial ECV expansion, as a surrogate for myocardial injury, is associated with increased Galectin-3 levels, indicating activated fibrogenesis in patients with myocarditis. Combining Galectin-3 measurements with ECV-imaging could improve risk stratification beyond conventional imaging parameters or biomarkers in these patients.

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