

**POSTER PRESENTATION**

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# Dynamic changes of the extracellular matrix after acute tako-tsubo cardiomyopathy

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## Background

We have recently demonstrated that cardiac energetic impairment and global myocardial edema persists for at least 4 months after an acute episode of Tako-tsubo cardiomyopathy (TTC). The aim of the current study was to evaluate the regional edema acutely and the status of the extracellular matrix at follow up

## Methods

Eleven patients (10F, mean age 56±16yrs) with a clear diagnosis of ST-elevation TTC and emotional trigger were prospectively enrolled and underwent cardiac magnetic resonance acutely (day 0-3) and after 4 months on a Philips 3T Achieva scanner. Native 3-3-5 (MOLLI) T1 mapping was applied acutely, and both native and post-contrast T1 mapping were performed at 4 months follow-up. Eleven healthy controls underwent only native T1 mapping. T1 maps were: generated using in-house software - written in IDL (Exelis, Boulder CO, USA); quality controlled with chi-square maps; and imported into Segment (Medviso, Lund University, Sweden), where T1 values were generated for 16 segments. Extracellular volumes (ECV) were calculated for the follow-up scan using:

$$ECV = (1 - \text{hematocrit}) (\Delta R_{1\text{myocardium}} / \Delta R_{1\text{blood}})$$

Segments were grouped according to their wall motion (WM) on the acute scan (normal/abnormal).

## Results

From the acute to the follow-up scan, the LVEF improved from 54±12% to 66±6%, whereas LV mass index decreased from 77±15 g/m<sup>2</sup> to 68±14 g/m<sup>2</sup>, both p<0.05.

*At the acute scan*, native T1 of abnormal WM segments was significantly longer compared with T1 from normal WM segments (1270±95 vs 1225±43 ms, p<0.05) and both were significantly increased compared to healthy controls (1188±16, p<0.05).

*At the follow-up scan*, ECV was increased to a similar extent both in segments that were dysfunctional and those that were normally contracting in the acute phase (33% and 34% respectively, p=0.05).

## Conclusions

We demonstrate oedema in both normal and abnormally contracting segments in patients with acute TTC and a similar degree of extracellular expansion at follow-up.

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