

POSTER PRESENTATION

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# Right ventricular involvement in Tako-tsubo cardiomyopathy - insights from cardiovascular magnetic resonance

Caroline Scally\*, Christopher J Neil, Janaki Srinivasan, Baljit Jagpal, Bernice K Ng, Michael P Frenneaux, John Horowitz, Dana K Dawson

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## Background

It has been recently suggested that patients with Tako-tsubo cardiomyopathy (TTC) who exhibit right ventricular (RV) involvement at Echocardiography may have a worse prognosis. The aim of the current study was to prospectively evaluate the extent of RV involvement acutely and at follow up using gold-standard cardiac magnetic resonance (CMR).

## Methods

21 patients, mean age 66 (range 41-87 years) with a clear diagnosis of TTC (14 with ST-elevation, 16 with apical ballooning) and emotional trigger were prospectively studied. CMR-derived LV and RV volumes and EF, RV shapes, RV wall motion index (WMSI, 6-segment model) and Echocardiography derived Pulmonary artery pressure (Pap), tricuspid annular E',A',S', pansystolic excursion (TAPSE) were measured acutely (day 0-3) and after 4 months follow-up.

## Results

Eleven patients demonstrated RV involvement on CMR - in contrast, RV wall motion abnormalities were identified in only 6 patients on Echocardiography. Patients were grouped according to the "acute" RV-WMSI on CMR: WMSI=1 (Group A, n=10) and WMSI>1 (Group B, n=11).

*In the acute phase*, LVEF was significantly lower in Group B compared with Group A ( $48\pm 10\%$  vs  $62\pm 6\%$ ,  $p=0.02$ ), but this did not reach statistical significance for RVEF ( $58\pm 13\%$  vs  $65\pm 7\%$ ,  $p=ns$ ). However, Pap was significantly higher acutely in Group B compared to Group A ( $40\pm 15$  mmHg vs  $28\pm 6$  mmHg,  $p=0.04$ ). There were

no significant differences between Groups for RV volumes (raw and indexed), E', A', S' or TAPSE.

*At follow-up*, LVEF improved significantly in both groups ( $62\pm 6\%$  to  $66\pm 6\%$  in Group A,  $p=0.01$  and  $48\pm 10\%$  to  $63\pm 6\%$  in Group B,  $p<0.01$ ). Pap decreased significantly in Group B (from  $40\pm 15$  to  $28\pm 8$ ,  $p=0.018$ ). RV-WMSI normalized in all but one in Group B.

## Conclusions

CMR detected RV involvement in 52% of patients presenting with acute TTC vs only 29% detected on Echocardiography and should be used as a gold-standard. WMSI and Pap are the best markers to identify these patients.

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