

Poster presentation

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## Multi-organ involvement assessed by MRI in patients with thrombotic thrombocytopenic purpura

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### Background

Thrombotic Thrombocytopenic Purpura (TTP) is an uncommon, acquired, life threatening, autoimmune disorder characterised by multi-organ involvement with microvascular occlusion. Although autopsy studies have shown high incidence of cardiac involvement, clinical evidence of cardiac disease is limited.

### Hypothesis

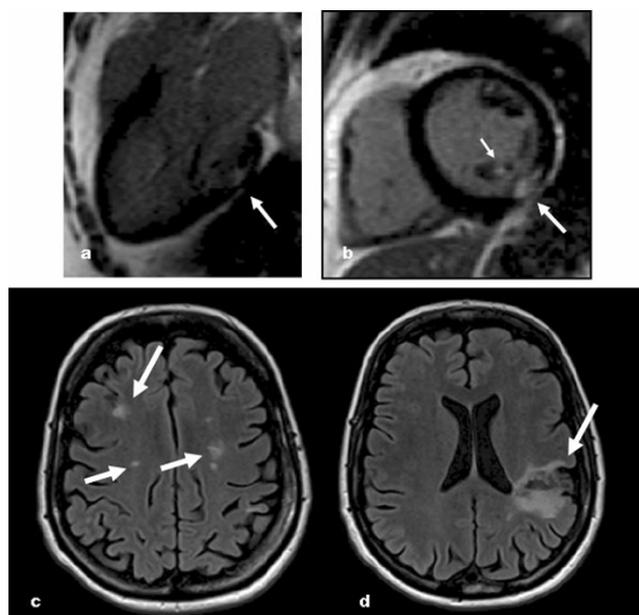
We hypothesised that, in TTP: 1) CMR would detect otherwise unrecognized cardiac involvement and 2) this involvement would correlate with other organ involvement.

### Method

Thirteen consecutive patients (4 males, 9 females, mean age:  $47 \pm 13$  years), enrolled as part of an observational study, were evaluated with standard cardiac and brain magnetic resonance. The late gadolinium enhancement (LGE) technique was used to assess areas of cardiac focal fibrosis potentially caused by micro-thrombotic damage.

### Findings

All patients had normal LV ejection fraction (mean EF  $66 \pm 5\%$ ). LV volumes and mass were normal in 11 of 13 patients and raised in 2. No patient had regional wall motion abnormalities. Three patients (23%) had patches of LGE which were sub-endocardial and limited in size (Figure 1a and 1b). By contrast, only two patients had a



**Figure 1**  
LGE images from a patient with TTP, showing a patchy LGE in the infero-lateral wall and papillary muscle (arrows). The patient had a normal coronary angiogram. **c**) Axial FLAIR sequence from an MRI brain study in the same patient demonstrates multiple cortical and subcortical areas of ischaemic damages (arrows). **d**) Axial FLAIR image showing a mature left middle cerebral artery branch ischaemic infarct involving the left parietal lobe, associated with mature blood products (arrow).

completely normal brain MRI. Four had supratentorial white matter lesions; seven had cerebellar/deep grey matter/subcortical/cortical infarcts (Figure 1c and 1d). All three patients with LGE had severe brain involvement. The extent of brain damage correlated with the presence of cardiac LGE (Kendall's tau-c = 0.43, p = 0.023).

### Conclusion

In this pilot study looking at cardiac involvement in TTP by CMR, CMR found LGE patches in one quarter of patients (without wall motion abnormalities). LGE was more likely to be found if there was more severe brain involvement.

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