

Poster presentation

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## Elevated Troponin I in patients with no or non-obstructive coronary arterial disease; Characterization by Cardiac MRI

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### Introduction

Patients with elevated Troponin I (Tn-I) are frequently referred for cardiac catheterization, but the absence of obstructive coronary arterial disease leads to diagnostic questions. Cardiac MRI (cMRI) is a powerful tool for characterizing myocardial abnormalities, and the use of contrast-enhanced techniques can determine the underlying pathology.

### Purpose

cMRI can define the etiology of elevated Tn-I in patients with non-obstructive disease, and may help define prognosis.

### Methods

All patients with non-obstructive CAD by coronary angiography (<50% luminal stenosis) and an elevated Tn-I who were referred for contrast-enhanced cMRI were retrospectively identified for the period of 11/29/2004-6/28/2008. Patients were subdivided based on cMRI findings: 1)Normal, 2)Ischemic Disease, 3)Myocarditis, 4)Takotsubo, and 5)Non-Ischemic Cardiomyopathy (NICM). Clinical characteristics (age, sex), Tn-I level, and ejection fraction (EF) were reviewed, as well as survival using the social security death index.

### Results

53 patients met the inclusion criteria. Twenty had normal angiograms, 33 had non-obstructive disease. Six (11%) had Normal cMRI parameters, 12(23%) had Ischemic disease, 12(23%) Myocarditis, 14(26%) Tako-Tsubo, and 9(17%) NICM. There was no significant difference in age

(standard deviation (SD) in parentheses) 44.4(14.7), 56.1(7.5), 49.2(18.5), 57.0(11.8), and 54.4(15.1) respectively and Tn-I, 3.6(2.5), 26.2(48.1), 11.7(17.3), 2.6(2.1), and 2.5(2.5). The EF did vary in the groups ( $p < 0.05$ ), 67.5(10.5), 59.8(14.2), 51.0(15.3), 50.6(10.8), and 39.1(8.8) respectively. Patients were followed up for  $2.1 \pm 1.0$  years. There were 6 deaths [3 in the NICM group, 2 in myocarditis, and 1 in the normal group ( $P = 0.16$ )], Table 1.

### Conclusion

Contrast enhanced cMRI is a useful modality in differentiating the conditions causing elevated Troponin I in setting of a non-obstructive coronary angiogram. Further follow-up is needed to ascertain the prognostic significance of cMRI findings.

**Table 1:**

	<b>Normal</b>	<b>Infarct</b>	<b>Myocarditis</b>	<b>Tako-Tsubo</b>	<b>NICM</b>
N (%)	6(11)	12(23)	12(23)	14(26)	9(17)
Age in yrs(SD)	44.4 (14.7)	56.1 (7.5)	49.2 (18.5)	57.0 (11.8)	54.4(15.1)
Males (%)	3(50)	1(8)	7(58)	2(13)	4(44)
EF% (SD)	67.5 (10.5)	59.8 (14.2)	51.0(15.3)	50.6 (10.8)	39.1(8.8)
Deaths	1	0	2	0	3
Troponin ng/ml (SD)	3.6 (2.5)	26.2 (48.1)	11.7(17.3)	2.6 (2.1)	2.5(2.5)

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