

Atypical form of Tako-Tsubo Cardiomyopathy

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A 22-year-old male smoker with no other cardiovascular risk factors presented within the first hours after a successful appendectomy with severe acute chest pain accompanied by nausea. An ECG showed ST-segment elevation in leads I, VL, V2–V4 and concurrent ST-depression in leads II, III, VF (Fig. 1). He was immediately transferred to the CCU where chest pain was relieved after nitrate therapy. Laboratory results found CK peak of 230 U/L and positive Troponine T (peak: 1.14 µg/L). A coronary angiogram was performed a few hours later, showing normal coronary arteries. Left ventricular angiogram showed akynesia of the middle segments of the inferior and anterior walls with preserved apical motion. A CMR study was performed within 24 hours, confirming circumferential akinesia of the middle segments of the left ventricle in the cine sequences (Fig. 2A), resulting in moderate global left ventricular systolic dysfunction (ejection fraction: 42%). Late gadolinium images did not show enhancement (Fig. 2B), ruling out the presence of myocardial infarction as well as myocarditis. A transaxial T2-weighted sequence did not show abnormal regional increase of the myocardial signal intensity (Fig. 3). The patient remained asymptomatic and was discharged at day 5 with a normal ECG (Fig. 4). A second CMR study was performed 2 weeks after the acute episode showing a complete normalization of regional contractility and normal left ventricular ejection fraction (65%) (Fig. 5).

Atypical forms of Tako-Tsubo cardiomyopathy have been recently described (1–4). In our case, as in all these reports, clinical data suggestive of Tako-Tsubo syndrome were present in patients in whom transient left ventricular ballooning was not localized at the apical ventricular portion, as classically described in this entity. The case we describe, however, is the first one reported, among atypical forms, studied with late gadolin-

ium enhancement. Deetjen et al (5) have recently reported a short series of patients with transient apical left ventricular ballooning studied by CMR, showing absence of myocardial gadolinium enhancement despite of an increase in the biochemical markers of myocardial damage. Accordingly, the CMR features of the atypical form we present here also indicate absence of myocardial edema, necrosis or inflammation. Use of late gadolinium enhancement CMR seems to be mandatory in these patients as it allows not only an accurate detection of segmental wall motion abnormalities but also the exclusion of even a localized non-transmural myocardial infarction (6) despite the definite increase in myocardial enzymes. In addition, CMR with late gadolinium enhancement is also useful to rule out other causes of reversible heart injury, as is acute myocarditis (7).

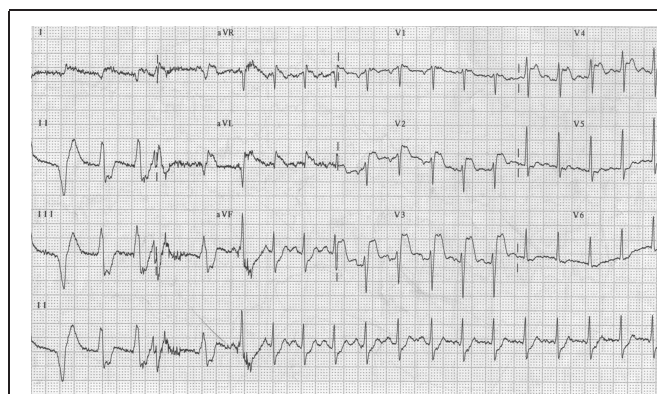


Figure 1. ECG showing ST-segment elevation in leads I, VL, V2–V4 (7 mm in V3) and concurrent ST-depression in leads II, III, VF.

Keywords: Tako-tsubo, cardiomyopathy, CMR, late gadolinium enhancement.

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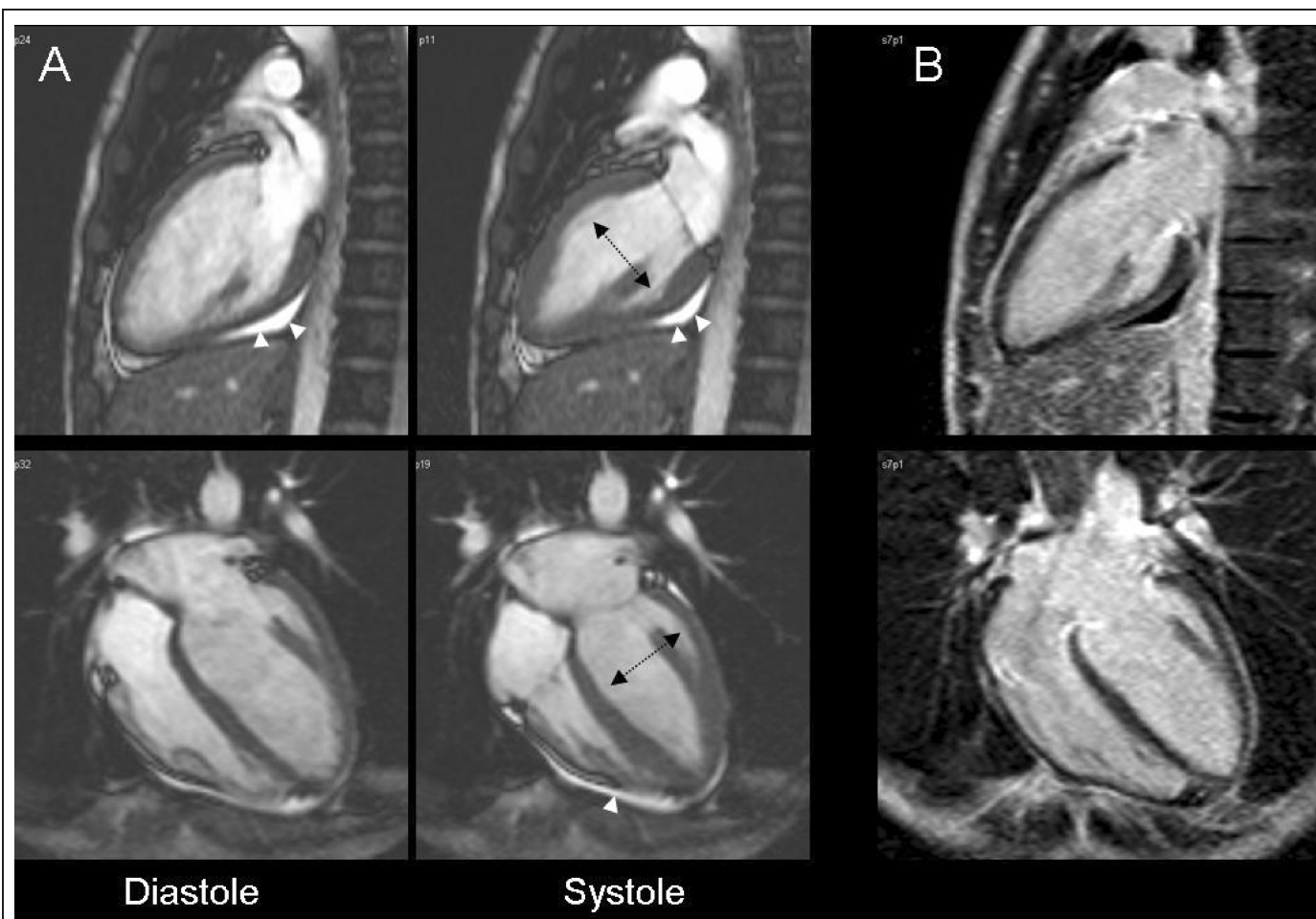


Figure 2. Vertical (top) and horizontal (bottom) left ventricular long-axis views. A, Cine-MR images showing akinesia of the mid-ventricular segments (arrows) with preserved motion in the apical region. A mild posterior pericardial effusion (arrow heads) is also seen. B, Late gadolinium images show no enhancement, this excluding the presence of myocardial necrosis or focal fibrosis.

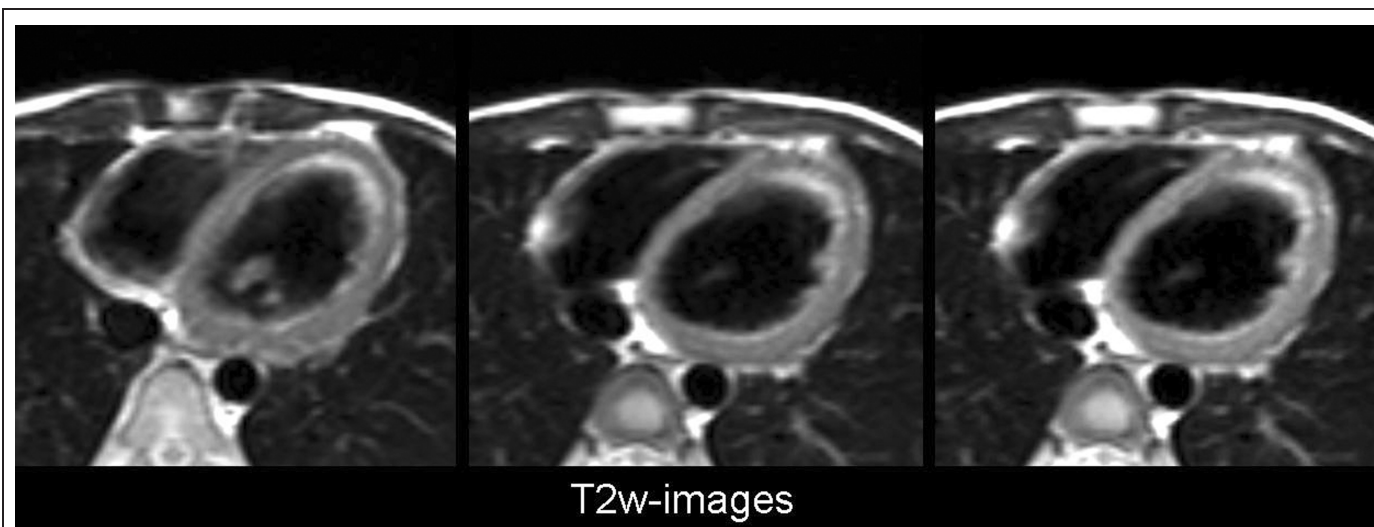


Figure 3. Transaxial T2-weighted images did not show abnormal regional increase of the myocardial signal intensity excluding the presence of edema.

Table 1.

	Tako-Tsubo	Acute Myocardial Infarction	Acute Myocarditis
cine-MR	+	+	+
Segmental wall motion abnormalities	Typical form = apical segments Atypical = mid or basal segments		Not corresponding to a specific coronary Artery territory
T2 edema CMR	±	+	+
Late Gadolinium Enhancement	–	+	±
		Endocardium involved	Patchy/endocardium not involved

REFERENCES

1.

Haghi D. Variant form of the acute apical ballooning syndrome (takotsubo cardiomyopathy): Observations on a novel entity. *Heart* 2006;92:392–4.

2.

Robles P. Images in cardiovascular medicine. Atypical transient left ventricular ballooning without involvement of apical segment. *Circulation* 2006;113:e686–8.

3.

Takeno Y. Pheochromocytoma with reversal of tako-tsubo-like transient left ventricular dysfunction: a case report. *J Cardiol* 2004;43:281–7.

4.

Yasu T. Transient mid-ventricular ballooning cardiomyopathy: A new entity of Takotsubo cardiomyopathy. *Int J Cardiol* 2005.

5.

Deetjen A. Value of gadolinium-enhanced magnetic resonance imaging in patients with Tako-Tsubo-Like left ventricular dysfunction. *J Cardiovasc Magn Reson* 2006;8:367–72.

6.

Ingkanisorn WP. Gadolinium delayed enhancement cardiovascular magnetic resonance correlates with clinical measurements of myocardial infarction. *J Am Coll Cardiol* 2004;43:2253–9.

7.

Abdel-Aty H. Diagnostic performance of cardiovascular magnetic resonance in patients with suspected acute myocarditis: comparison of different approaches. *J Am Coll Cardiol* 2005;45:1823–5.

