Takotsubo Cardiomyopathy: An AHP Guide

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Introduction

Takotsubo cardiomyopathy, also known as stress cardiomyopathy or "broken heart syndrome", is a transient, often reversible cause of acute chest pain and left ventricular dysfunction. It predominantly affects post-menopausal women and is typically triggered by intense emotional or physical stress.

From a CMR perspective, it mimics acute coronary syndrome but without obstructive coronary disease. The hallmark is regional wall motion abnormalities (usually apical ballooning), myocardial oedema, and absence of late gadolinium enhancement (LGE).

For allied health professionals, CMR plays a crucial role in diagnosis and patient reassurance. Ensuring good-quality cine, T2-weighted, and LGE imaging is essential. Close attention to wall motion and oedema distribution can help differentiate Takotsubo from infarction or myocarditis.

CMR Protocol

Step	Sequence / Technique	Purpose / Notes
1	Anatomy (Localizers)	Scout images to plan cardiac views
2	LV and RV Function – Cine SSFP	SA stack + 2CH, 3CH, 4CH views to assess biventricular size, EF, and motion
3	T2-weighted Imaging	Detect myocardial oedema in affected wall motion regions

4	Late Gadolinium Enhancement (LGE)	Identify infarct or exclude scar; typically no LGE in Takotsubo
5	T2 Mapping (if available)	Quantify oedema in dysfunctional segments

Reporting Checklist

- LV EDV, ESV, SV, EF (indexed to BSA)
- RV EDV, ESV, SV, EF
- Regional wall motion abnormalities (typically apical akinesia with basal hyperkinesia is the most common presentation)
- The pattern of regional akinesia or hypokinesia is non-coronary in distribution, often extending beyond the territory supplied by any one epicardial coronary artery
- Oedema: Distribution should match regions with wall motion abnormalities
- LGE: Typically absent in Takotsubo; rare cases may show infarct-like enhancement

Key Diagnostic Criteria

- Transient LV Dysfunction – Neurogenic myocardial stunning, not coronary occlusion
- Demographic Pattern – Post-menopausal women, typically following stress (emotional or physical)
- Recovery Timeline – Acute onset; recovery typically begins within days, complete within weeks
- Classic Takotsubo Pattern – Apical ballooning (akinesia), hyperkinesia of basal or mid-ventricular segments
- Inverted Takotsubo Pattern – Mid and basal akinesia, apical hyperkinesia
- Oedema Present – Matches dysfunctional regions; may be confirmed with T2 or T1 mapping
- No LGE (typically) – Helps distinguish from myocardial infarction or myocarditis

Tips & Tricks for Allied Health Professionals

- Ensure high temporal resolution cine imaging in long-axis views to clearly identify apical ballooning or hyperkinetic basal segments.
- Carefully plan T2 or mapping slices through the areas of abnormal motion to assess oedema.
- Absence of LGE supports the diagnosis—ensure good inversion time selection for nulling myocardium.
- Be vigilant for inverted patterns—check for basal involvement and preserved apex.
- Capture clinical history where possible (e.g., emotional stress, normal angiogram) to support pattern recognition.

Reference:

Herzog, B. A., Greenwood, J. P., Plein, S., Garg, P., Haaf, P., & Onciul, S. (2017). Cardiovascular magnetic resonance pocket guide. *Eur Soc Cardiol*.