

## IMAGE CHALLENGE

## A 69-year-old woman with extended negative T wave

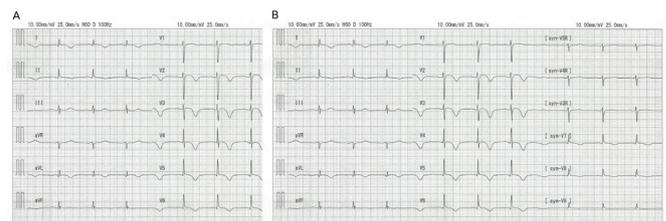
### CLINICAL INTRODUCTION

A 69-year-old woman with hypertension and dyslipidemia developed sudden onset of substernal chest pain at night and was admitted to our hospital the following day. A 12-lead and 18-lead ECG (Nihon Kohden, Japan) was done (figure 1A,B).

### QUESTION

Which is the most likely diagnosis?

A. Reperfused anterior acute myocardial infarction



**Figure 1** (A) Twelve-lead ECG. (B) Eighteen-lead ECG.

- B. Takotsubo (stressed) cardiomyopathy
- C. Pericarditis
- D. Apical hypertrophic cardiomyopathy

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## ANSWER

**B. Takotsubo (stress) cardiomyopathy**

Extended negative T waves in a 12-lead ECG can be found in patients with acute myocardial infarction (AMI), Takotsubo cardiomyopathy, pericarditis and apical hypertrophic cardiomyopathy. In this patient, pericarditis was unlikely because there was no ST-segment elevation or PR-segment depression.<sup>1</sup> Hypertrophic cardiomyopathy was also unlikely because of the prolonged QT interval<sup>2</sup> and the lack of negative T waves with a strain pattern. However, it was challenging to differentiate an AMI from a Takotsubo cardiomyopathy with a 12-lead ECG.

Negative T wave locations in an 18-lead ECG provide the critical clue to differentiate between the two diseases.<sup>3</sup> Negative T waves in precordial (V1, V2, V3, V4), inferior (especially in II) and posterolateral (V6, syn-V7, syn-V8 and syn-V9) leads reflect pathological conditions of the anterior, inferior and posterolateral myocardium the possibility of a Takotsubo cardiomyopathy should be strongly considered because simultaneous changes in these leads in an AMI is extremely rare.

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