

J-wave syndrome potentially exacerbated by therapeutic hypothermia

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A 46-year-old man with no history of syncope presented with sudden cardiac arrest. Prior to arrival, he had received bystander cardiopulmonary resuscitation for 5 min and defibrillation with an automated external defibrillator. Spontaneous circulation had returned while at the scene. However, he was unconscious upon admission to the hospital, where an electrocardiogram (ECG) revealed J-wave elevation over a wide range of leads (I, II, III, aVR, aVF, and V3–6; Fig. 1a). His body temperature (36.8°C) and other vital signs were within the normal limits.

Emergency coronary angiography findings showed no significant coronary artery stenosis. After we induced therapeutic hypothermia (34°C) [1], ECG showed further elevation of J-waves with multifocal ventricular

premature complexes (PVCs) (Fig. 1b). Furthermore, the patient experienced recurrent episodes of ventricular fibrillation (VF). Amiodarone, lidocaine, magnesium, and landiolol were ineffective at resolving the VF storm; however, isoproterenol was effective [2]. A Brugada-type electrocardiogram pattern was never observed. Thus, we diagnosed the patient with J-wave (early repolarisation) syndrome. The differential diagnosis of J-wave syndrome includes intraventricular conduction delay-induced end QRS notch syndrome as well as Brugada syndrome [3].

In our patient's case, therapeutic hypothermia negatively impacted J-wave syndrome [4]. After performing catheter ablation for the PVCs that were triggering VF and implantation of a cardioverter defibrillator, the patient experienced no further incidences of VF [5].

Received: October 28, 2021. Revised: January 13, 2022. Accepted: January 23, 2022

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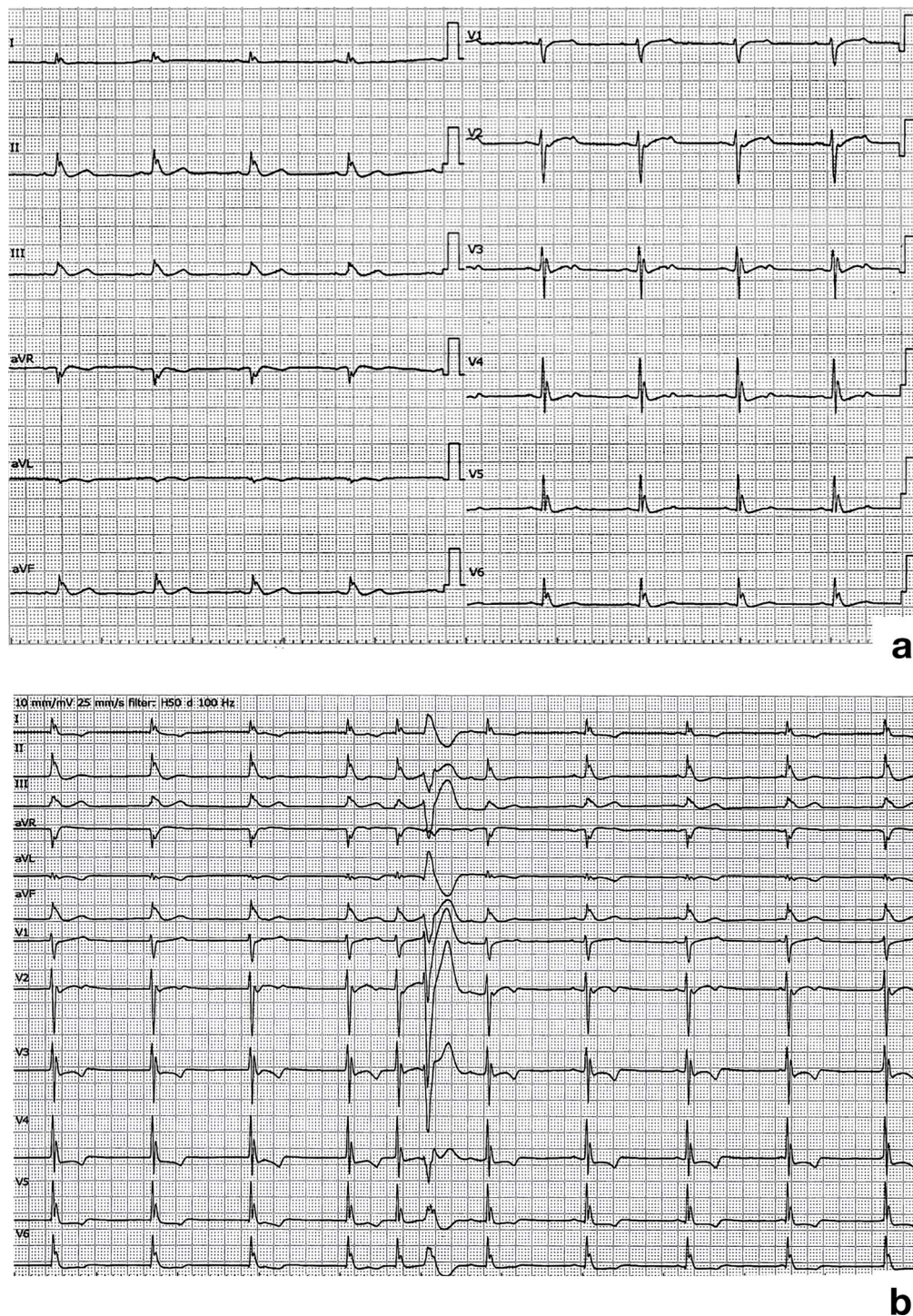


Figure 1. a) Electrocardiogram recorded upon admission shows J waves in leads I, II, III, aVR, aVF, and V3–6. b) Electrocardiogram after induced hypothermia shows further elevation of J-waves with multifocal ventricular premature complexes.

ACKNOWLEDGEMENTS

We would like to thank Editage (www.editage.jp) for English language editing.

FUNDING

None.

CONFLICT OF INTEREST

No conflicts of interest.

ETHICAL APPROVAL

No approval was required.

CONSENT

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

GUARANTOR

Masahiro Kashiura is the guarantor of this article.

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