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IMAGING VIGNETTE

BEGINNER

ECG CHALLENGE

Acute Anterior Myocardial Infarction in a Patient With Dextrocardia and Situs Inversus

An Unusual Coexistence

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ABSTRACT

Situs inversus totalis is a rare disorder. In addition, acute coronary syndromes, especially ST-segment elevation myocardial infarctions, are rarely detected in this group. We demonstrate the electrocardiographic features and discuss the interventional challenges of acute anterior myocardial infarction in a patient with dextrocardia. (**Level of Difficulty: Beginner.**) (J Am Coll Cardiol Case Rep 2020;2:1220–1) © 2020 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

A 32-year-old man presented to the emergency department with reports of severe retrosternal chest pain radiating to the right shoulder and right arm. His recent medical history and physical examination were unremarkable with the exception of class 2 obesity. An electrocardiogram (ECG) showed a reversal of polarity in leads I and aVL, QS and rS patterns in the precordial leads, and positive polarity in aVR (**Figure 1A**, circle and asterisks). ST-segment elevation was detected in leads aVR and V_1 to V_4, and ST-segment depression was seen in D_2, D_3, and aVF (**Figure 1A**). Because the initial ECG findings were consistent with typical features of dextrocardia, a right-sided ECG was obtained. This ECG revealed ST-segment elevation in leads D_1, aVL, and V_1 to V_6 combined with reciprocal ST-segment depression in D_2, D_3, and aVF, findings compatible with acute anterior myocardial infarction (**Figure 1B**). Coronary angiography demonstrated total occlusion of the proximal left anterior descending coronary artery, and a drug-eluting stent was subsequently implanted.

Dextrocardia with situs inversus is a rare anomaly affecting approximately 1 to 2 in 10,000 in the general population (1). Case reports of acute myocardial infarction in patients with dextrocardia are seldom reported because of the rarity of dextrocardia and situs inversus, even though the incidence of acute coronary syndromes in dextrocardiac patients is similar to that in the general population (2). However, there are many challenges in the diagnosis of and invasive procedures for acute coronary syndromes in patients with dextrocardia. Careful ECG analysis is a cornerstone diagnostic approach for these patients.

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The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the *JACC: Case Reports* author instructions page.

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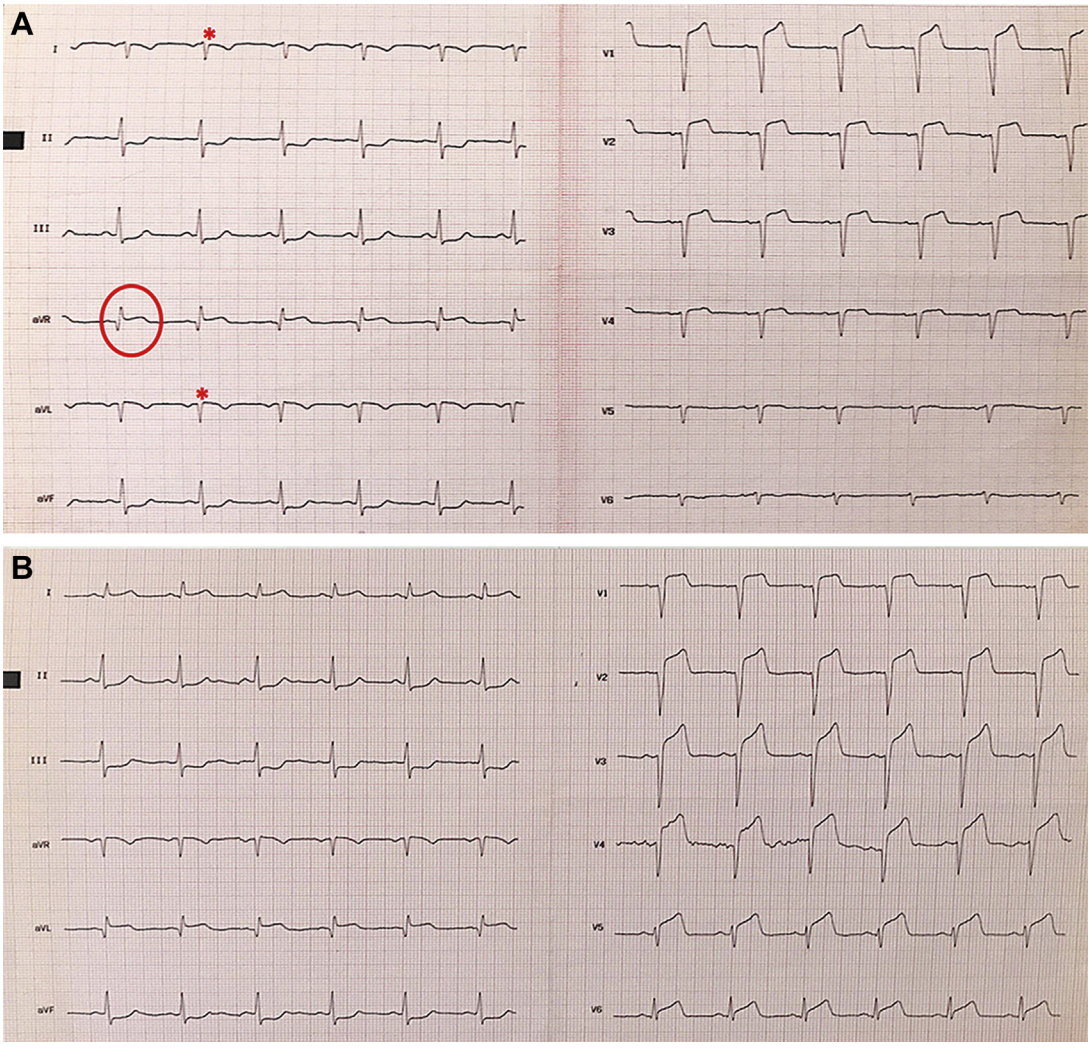
ABBREVIATION AND ACRONYM

ECG = electrocardiogram

FIGURE 1 Dextrocardia and Acute Myocardial Infarction



(A) The standard 12-lead electrocardiogram showed typical features of dextrocardia characterized by a reversal of polarity in leads I and aVL, QS and rS patterns in the precordial leads, and positive polarity in aVR **(circle and asterisks).** ST-segment elevation was detected in leads aVR, and in V_1 to V_4, and ST-segment depression was detected in the inferior leads. **(B)** Right-sided electrocardiogram showed an acute anterior myocardial infarction.

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KEY WORDS anterior myocardial infarction, dextrocardia, situs inversus, ST-segment elevation