



ACUTE INFERIOR MYOCARDIAL INFARCTION in DEXTROCARDIA- DIAGNOSTIC and THERAPEUTIC CHALLENGE

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Case Report

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Abstract

Dextrocardia with situs inversus has an incidence of 1 in 10,000 and is a rare cardiac anomaly in which the heart is located in the right hemithorax with the axis directed to the right and caudally. Patients with dextrocardia present a diagnostic challenge, especially in the setting of acute coronary syndrome. The left circumflex artery (LCx) is the least frequent culprit artery for acute myocardial infarction (AMI) in the general population. An electrocardiogram (ECG) has very low sensitivity for detecting ST-segment elevation myocardial infarction (STEMI) if the culprit lesion is in the LCx. The coexistence of dextrocardia and LCx occlusion increases the difficulty of diagnosis via ECG. We herein present a case of dextrocardia and LCx-related STEMI. Coronary heart disease and AMI occur at the same frequency in patients with dextrocardia as in the general population. Notably, given the rarity of dextrocardia, only a few reports to date have described the existence of AMI as a result of acute LCx occlusion in a patient with dextrocardia.

Key Words: Acute myocardial infarction, Dextrocardia, Primary angioplasty.

Özet

Situs inversus ile birlikte olan dekstrocardi insidansı 10.000'de 1 olup, kalbin sağ hemitoraksta, eksenin sağa ve kaudale dönük olduğu nadir bir kardiyak anomalidir. Dekstrocardisi olan hastalarda bu durum, özellikle akut koroner sendrom durumunda tanınal zorluklara neden olur. Sol sirkumfleks arter (LCx), genel popülasyonda akut miyokard enfarktüsüne (AMI) en az neden olan sorumlu arterdir. Bir elektrokardiyogramın (EKG), sorumlu lezyon LCx'deyse ST segment yükselmeli miyokard enfarktüsünü (STEMI) saptamak için düşük duyarlılığı vardır. Dekstrocardi ve LCx oklüzyonunun birlikteliği EKG ile tanı koymanın zorluğunu artırmaktadır. Biz burada dekstrocardili bir hastada LCx ile ilişkili STEMI olgusu sunuyoruz.

Koroner kalp hastalığı ve AMI, genel popülasyonda olduğu gibi dekstrocardili hastalarda aynı sıklıkta ortaya çıkar. Özellikle, dekstrocardinin nadirliği göz önüne alındığında, dekstrocardili bir hastada akut LCx oklüzyonunun bir sonucu olarak AMI'nin varlığı bugüne kadar sadece birkaç raporlanmıştır.

Anahtar Kelimeler: Akut miyokard enfarktüsü, Dekstrocardi, Primer anjiyoplasti.

1. Introduction

Dextrocardia with situs inversus has an incidence of 1 in 10,000 and is a rare cardiac anomaly in which the heart is located in the right hemithorax with the axis directed to the right and caudally (Nesta et al., 2016). Patients with dextrocardia present a diagnostic challenge, especially in the setting of acute coronary syndrome (Ibanez et al., 2018). The left circumflex artery (LCx) is the least frequent culprit artery for acute myocardial infarction (AMI) in the general population (Kang et al., 2018). An electrocardiogram (ECG) has very low sensitivity for detecting ST-segment elevation myocardial infarction (STEMI) if the culprit lesion is in the LCx. (Bauer et al., 2013). The coexistence of dextrocardia and LCx occlusion increases the difficulty of diagnosis via ECG. We herein present a case of dextrocardia and LCx-related STEMI.

2. Case Report

A 71-year-old man presented to emergency department because of a 6-hour history of chest tightness. On admission, his heart rate was 44 beats/minute, blood pressure was 100/60 mmHg, and oxygen saturation was 93% on room air.

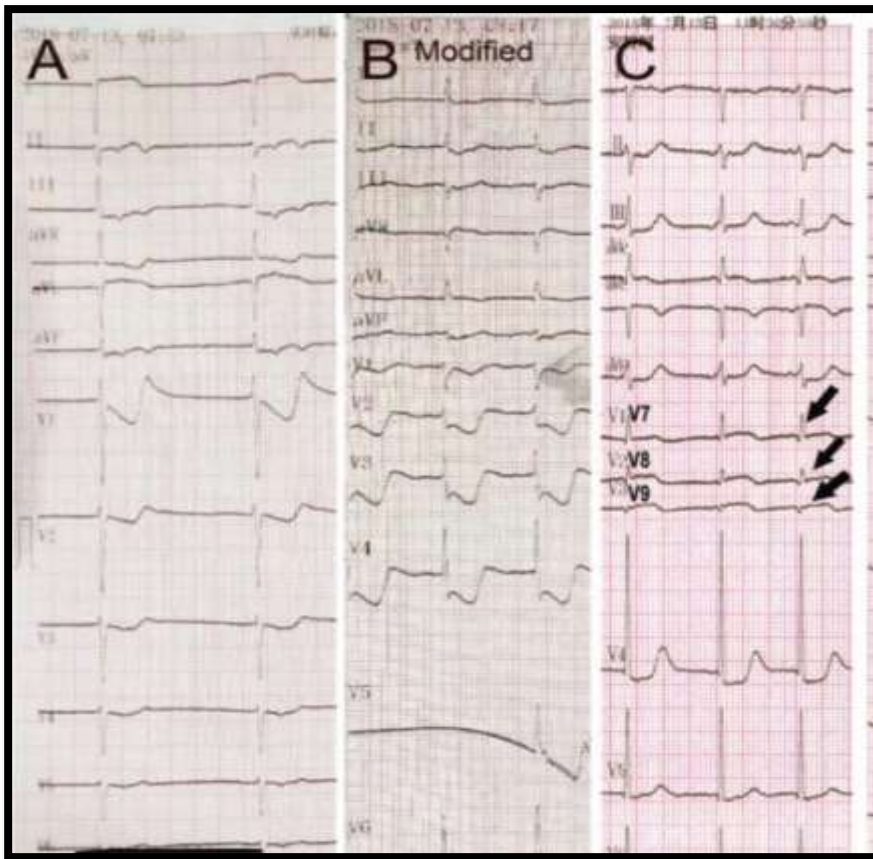


Figure 1: Electrocardiogram manifestation on admission with (a) conventional lead placement and (b) modified lead placement prior to percutaneous coronary intervention, (c) right posterior lead placement (V1–V3 reflect V7–V9 as shown in this picture).

The heart sounds could be auscultated on the right side of his chest without any murmurs, and his breath sounds were clear in both lung fields. His troponin concentration was 6260 ng/L (reference range, 0–14 ng/l) creatinine 1.24 mg/dl (reference range, 0,7-1,2 mg/dl) CRP 92 mg/L (range, 0-5 mg/L). The initial ECG indicated a junctional rhythm right axis deviation, a positive R wave in aVR, and a prominent S wave and absent R-wave progression in the left-side chest leads; these findings were suggestive of dextrocardia (Figure 1a).

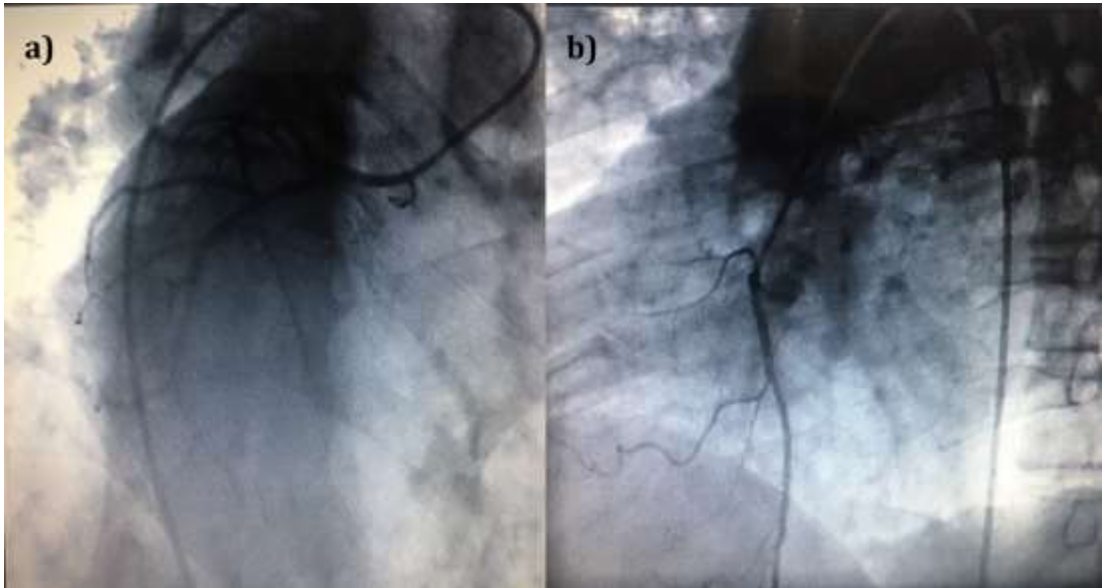


Figure 2a: Diagnostic Coronary Angiography

The patient was given normal saline solution, which yielded improvement in his heart rate and blood pressure over the next few minutes. After hemodynamic recovery, another ECG was recorded with reversal of the left and right arm leads and placement of the precordial leads in a mirror-image position on the right side of the chest. This ECG revealed an accelerated junctional escape rhythm with prominent ST depression in the precordial leads (Figure 1(b)).

These additional ECG leads revealed subtle ST-segment elevation in leads V7 to V9, consistent with lateral wall AMI (Figure 1(c)). Echocardiography; Ef %45 inferior segment hypokinetic. Coronary angiography; Lmca was catheterized with JL4 6F. Lmca was evaluated as normal, Lad 20% plaque, LCx 99% thrombosed. The Rca artery was catheterized with JR4 6F and evaluated as plaque. The subtotally occluded LCx was the culprit lesion responsible for the AMI (Figure 2a,b). The Lmca ostium was seated with a 6F EBU 4.0 cm Judkins catheter. A drug-eluting

stent (DES) 3,0*33 mm was implanted to cover the culprit lesion, and the coronary flow was restored completely (TIMI 3 flow) (Figure 3a,b).

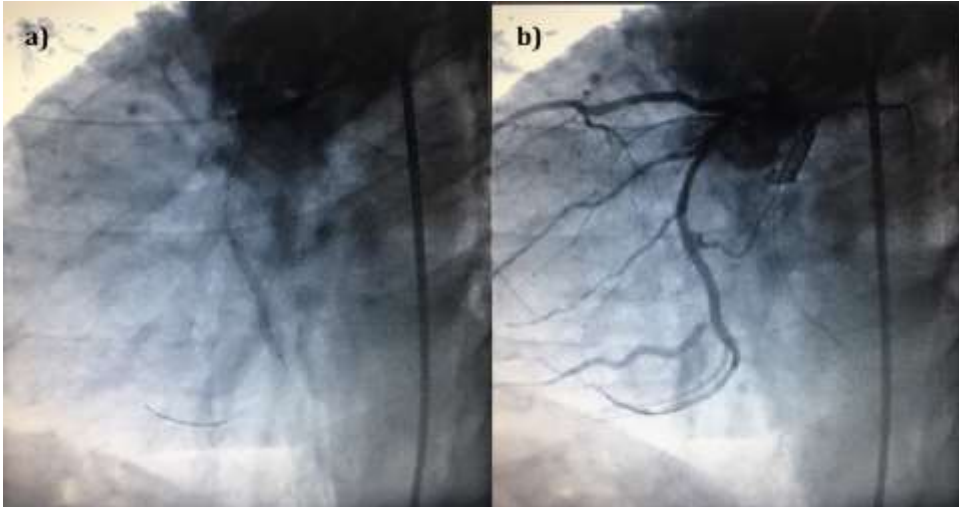


Figure 3: Therapeutic Coronary Angiography

3. Discussion and Conclusion

Coronary heart disease and AMI occur at the same frequency in patients with dextrocardia as in the general population. Notably, given the rarity of dextrocardia, only a few reports to date have described the existence of AMI as a result of acute LCx occlusion in a patient with dextrocardia.

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