Case Report

ISSN 2639-8486

Cardiology & Vascular Research

Acute Coronary Syndrome and Dextrocardias, an Unusual Combination: A Case Report

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Received: 14 Sep 2025; **Accepted:** 21 Oct 2025; **Published:** 30 Oct 2025

Citation: Christolyn Michel, Papa Guirane Ndiaye, Senankpon paterne Aymard Abadassi, et al. Acute Coronary Syndrome and Dextrocardias, an Unusual Combination: A Case Report. Cardiol Vasc Res. 2025; 9(5): 1-3.

ABSTRACT

We report the case of a 60-year-old female patient presenting with acute coronary syndrome on dextrocardia of the situs inversus type. Dextrocardia is a rare anomaly characterized by the location of the heart on the right side instead of the left. It is a malformation whose embryonic origin is not well understood. It is often discovered incidentally during additional tests performed for other health problems.

Keywords

Dextrocardia, Acute coronary syndrome, Senegal.

Introduction

Dextrocardia is characterized by the location of the heart on the right side of the chest cavity instead of the left side. It is a congenital condition whose embryonic origin is unknown to date [1]. Dextrocardia with complete situs inversus is a rare condition, affecting approximately 2 in 10,000 live births [2]. Cases of ischemic heart disease and myocardial infarction have been reported in patients with dextrocardia in the literature, but this remains an unusual coexistence [3]. The incidence of atherosclerosis in this group is unknown, but it is considered to be the same as in the general population. It is sometimes associated with other more serious malformations (pulmonary stenosis, single ventricle, transposition of the great vessels, interventricular communication). In cases of dextrocardia, congenital anomalies should be systematically investigated. The anomaly is rare (< 2/10,000 births and 1.8% of congenital heart diseases). It is often asymptomatic, isolated or sometimes associated with a condition called 'situs inversus' in which the liver, spleen or other visceral organs are also located on the opposite side from normal [1]. Some people with the condition may not show any obvious signs or symptoms. Others may experience the following signs and symptoms like breathing difficulties, cyanosis, paleness, fatigue [4].

Observation

The patient was a 63-year-old woman with cardiovascular risk factors including age, sedentary lifestyle, and menopause. Three days prior to admission, she had experienced a chest pain (constrictive, intense, lasting more than 20 minutes without relief, radiating to the right arm), requiring consultation at a health center in Barkhedji in the department of Linguère, a region of Senegal where she was prescribed proton pump inhibitor treatment. She had returned home but her symptoms had not improved. Due to the persistent pain, she came to consult in the cardiology department at Magatte Lo Hospital in Linguère. The examination carried out on admission found the patient to be conscious, cooperative, and in good general health, rated 3 according to the World Health Organization (WHO) classification. The mucous membranes were colored and not jaundiced, there were no signs of dehydration or malnutrition, and no edema of the lower limbs. Blood pressure was 156/88 mmHg, heart rate was 71 beats per minute, oxygen saturation was 99% in ambient air, and fasting blood sugar was 1.10 g/dl. Heart sounds were heard on the right side, regular

with no additional noise or murmur, lung fields clear, no signs of peripheral heart failure. The leads showed a regular sinus rhythm with subepicardial ischemia-lesion current with Q waves of necrosis in V3R and V4R (Figure 2).

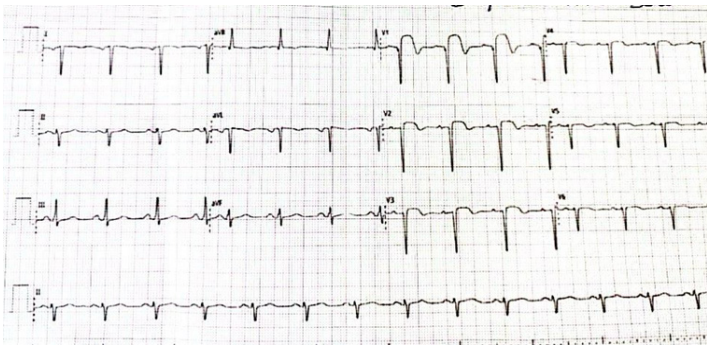

Figure 1: Electrocardiogram showing a regular sinus rhythm with a straight axis, a positive wave in D1 and AVL, posterior hemiblock, anterior R wave abrasion, and subepicardial lesion current in the anteroseptal-apical region **(blue arrow)**.

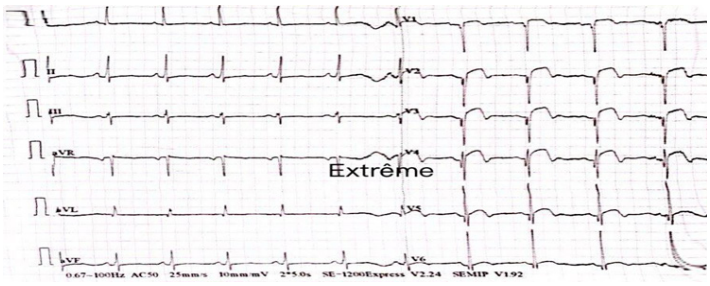

Figure 2: Electrocardiographic tracing of the extreme leads showing a regular sinus rhythm with subepicardial ischemia-lesion current with a QS pattern in V3R and V4R.

The patient was quickly transferred to the intensive care unit, where loading doses of aspirin (300 mg) and clopidogrel (300 mg) were administered with full conditioning and monitoring of various hemodynamic parameters under scope.

Biological tests showed troponin levels of 2000 ng/L, a positive CRP of 192 mg/L, and fasting blood sugar levels of 1.11 g/L. The cardiac Doppler ultrasound showed normal-sized chambers and hypokinesia of the antero-septo-basal, infero-septo-basal, and apical segments. A preserved LVEF of 59% on Simpson Biplane. The chest X-ray confirmed the diagnosis of dextrocardia by showing a left heart apex with dextroposition of other organs such as the stomach, resulting in situs inversus, as shown in Figure 3. Coronary angiography was performed with a change in the usual incidences due to dextrocardia and showed a dominant right network with highly atherosclerotic arteries and tritroncular involvement consisting of occlusion of the distal anterior interventricular artery without recovery, an intermediate lesion of the middle circumflex artery, and a tight lesion of the ostium of the posterior interventricular artery, which is small in caliber (Figure 4).

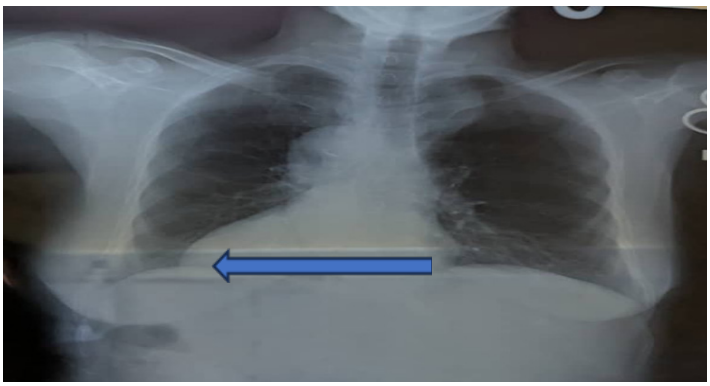

Figure 3: Frontal chest X-ray showing dextrocardia with organ inversion and the apex of the heart on the right **(blue arrow).**

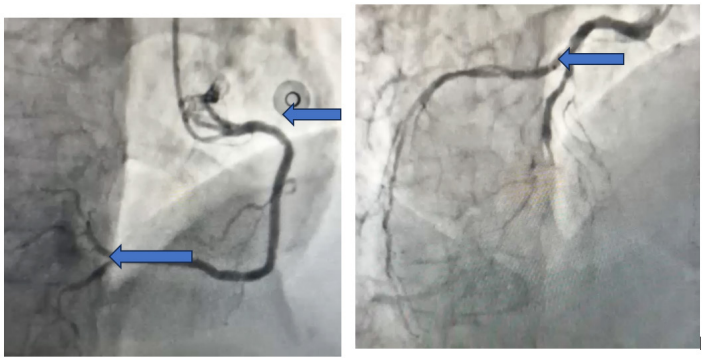

Figure 4: Coronary angiography image showing a dominant right network with highly atherosclerotic arteries and three-vessel disease consisting of occlusion of the distal anterior interventricular artery without recanalization, an intermediate lesion of the middle circumflex artery, and a tight lesion of the ostium of the posterior interventricular artery, which is small in caliber **(blue arrow).**

The maintenance treatment consisted of 100 mg of aspirin, 75 mg of clopidogrel, 80 mg of statin, a beta-blocker, an angiotensin-converting enzyme inhibitor, a proton pump inhibitor, and a double dose of low molecular weight heparin.

Discussion

Dextrocardia with situs inversus is a rare congenital malformation characterized by inversion of the major visceral organs. Acute coronary syndromes are rare in these patients. In cases of chest pain in this context, it is important to be aware of the particular problems that may arise if coronary intervention is considered [5]. Clinical diagnosis and electrocardiographic localization of myocardial infarction in these patients remain very difficult [6]. The chest pain is often severe and prolonged retrosternal angina-like pain. The electrocardiogram often shows minimal ST segment elevation in chest leads V1 and V2 with a marked deviation of the right axis of the QRS and P waves (negative in leads I and aVL [7] as in our patient, revealing anterior wall involvement.

Dextrocardia is often confirmed by chest X-ray and echocardiography [8], as in our patient. In general, patients with dextrocardia have a structurally normal heart and normal life

expectancy, as in the case of our 63-year-old patient. The risk of atherosclerosis in patients with dextrocardia and coronary artery disease is similar to that of the general population [7]. Situs inversus dextrocardia is a challenging situation for an interventional cardiologist, as it was in our case. A study by Anil presents a rare case in which a multivessel percutaneous coronary intervention was performed in a single session using a transradial approach [9]. Percutaneous coronary intervention is an effective treatment option for improving the prognosis of acute myocardial infarction in patients with dextrocardia [10]. Angioplasty can be performed safely via the transradial route in patients with dextrocardia. This unusual anatomy can make the angioplasty procedure more difficult, as the guidance and maneuverability of the system become more complex. Patients presenting with STEMI and dextrocardia with situs inversus can be treated with angioplasty via transradial access with excellent results [11]. Three-vessel disease, as in our case, is more complex to treat [10].

Conclusion

The diagnosis of acute myocardial infarction is sometimes difficult in patients with dextrocardia, especially when it is not known in advance. Interpreting the ECG and performing coronary angiography or even angioplasty remain a real challenge due to the modification of the usual reference points. Hence the need for a more cautious and methodical approach to the management of chest pain.

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