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ECG CHALLENGE

What is the diagnosis?

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In this manuscript, we present an ECG that is diagnostic of congenitally corrected transposition of great arteries (ccTGA) and ask about the arrhythmias associated as well as the management options.

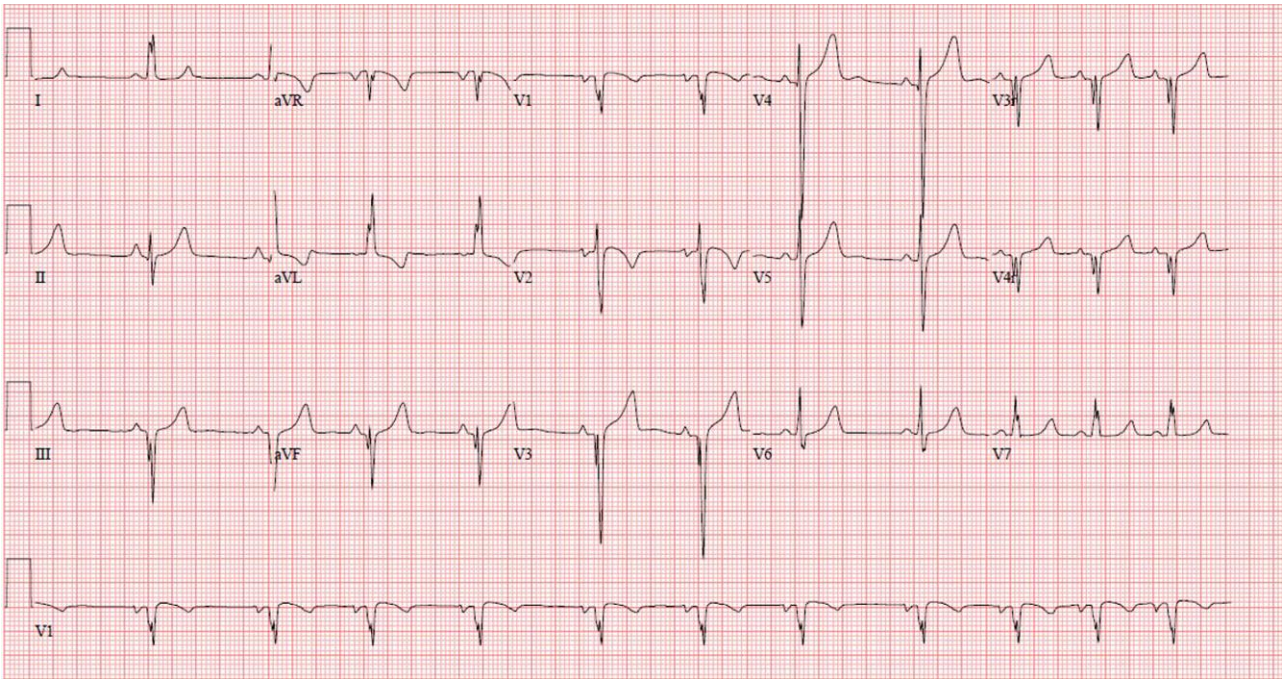
Keywords ccTGA • arrhythmia • paediatrics

Clinical vignette

A 6-year-old child is followed in the paediatric cardiology clinic. The patient has been receiving periodic assessments including electrocardiograms (ECGs), echocardiograms (ECHOs), and Holter monitoring. The child's medical history does not include any surgical interventions.

The child's overall health has been stable, with no symptoms reported during routine clinical visits. As part of the ongoing evaluation, an ECG was performed during the latest visit which is shown below:

ECG



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1. What is the diagnosis based on the clinical picture and ECG findings?

a. Tetralogy of Fallot
b. D—Transposition of the great arteries
c. congenitally corrected transposition of the great arteries (ccTGA)
d. Ventricular septal defect (VSD)
e. Atrial septal defect (ASD)

Explanation:
The correct answer is **C**

In ccTGA (congenitally corrected transposition of the great arteries), the ECG findings show the absence of initial Q waves that are typically seen in leads V5 and V6 (lateral precordial leads), as well as the abnormal presence of initial Q waves in leads V3R and V1 (anterior precordial leads). These findings represent the abnormal depolarization sequence of the interventricular septum present in ventricular inversion.[1]

The other options have different ECG findings: Tetralogy of Fallot can show right ventricular hypertrophy and strain pattern, D-Transposition of the great arteries has non-specific ECG findings, VSD may show signs of ventricular hypertrophy, and ASD can have a normal ECG or signs of right atrial enlargement.

2. Which arrhythmia is most commonly associated with the diagnosis?

a. Complete heart block
b. Supraventricular tachycardia (SVT)
c. Wolff–Parkinson–White syndrome (WPW)
d. Bradyarrhythmia
e. Junctional rhythm

Explanation:
The correct answer is **A**

Complete heart block is the most common arrhythmia associated with ccTGA. Other options are also associated with ccTGA but are less common. WPW is caused by an abnormal accessory pathway, which can lead to supraventricular tachyarrhythmias. Bradyarrhythmias and complete heart block can occur due to abnormalities in the conduction system.[2–3]

3. What is the best treatment option for this case?

a. Observation
b. Pulmonary artery (PA) banding
c. Double switch procedure
d. Heart transplantation
e. Balloon valvuloplasty

The correct answer is **A**

The best treatment option for the presented case is observation. The patient has been stable with no significant symptoms, and the provided electrocardiogram (ECG) as well as the normal reported echocardiogram do not indicate an immediate need for intervention.[4]

ccTGA patients who remain unoperated are at risk to develop systemic atrioventricular valve (SAVV) regurgitation, which can lead to systemic ventricle (SV) dysfunction. However, the decision for surgical intervention depends on the severity of regurgitation and signs of ventricular dysfunction, which are not evident in this case.[4]

The other options are not indicated in this case based on the absence of specific indications or evidence for these interventions.

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Consent: The patient agreed to have this ECG published online.

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Data availability

There are no new data associated with this article.

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