

A Single Coronary Artery Anomaly in a Patient with Atrial Level Repair of Transposition of Great Arteries

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Kardiyoloji

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Özet

Tek koroner arter nadir görülen konjenital bir durumdur ve büyük arter transpozisyonu olan hastalarda daha nadir görülür. Koroner arter reimplantasyonu, büyük arterlerin transpozisyonu tamir operasyonunun bir parçası olduğu için, normal koroner anatomisini, varyasyonları veya anomalilerini bilmek oldukça önemlidir.

Anahtar kelimeler: *B büyük arter transpozisyonu, Tek koroner arter Kalp cerrahisi*

Abstract

Single coronary artery is a rare congenital condition and seen more rare in patients with transposition of great arteries. Since coronary artery reimplantation is part of the repair of transposition of great arteries. Knowledge of normal coronary anatomy and its variations or anomalies is essential in heart surgeries.

Keywords: *Transposition of great arteries, Single coronary artery Heart surgery*

Introduction

TGA was first described over 2 centuries ago and is the most common cyanotic congenital heart lesion that presents in neonates ¹. The hallmark of TGA is ventriculoarterial discordance, in which the aorta arises from the morphologic right ventricle and the pulmonary artery arises from the morphologic left ventricle. When the aorta is anterior and to the right of the pulmonary artery, it is named as dextro-transposition of the great arteries [d-TGA] as in our patients. A variety of coronary anomalies are seen in approximately one third of patients with d-TGA ². The most common abnormality is a left circumflex artery arising from the RCA.

Case Report

A 21-year-old male patient was admitted to our institute to evaluate eligibility for military service. We learned that he had a heart surgery when he was 2-month old, but he does not any operation note and/or epicrisis and does not know why this heart surgery was performed. Firstly, we performed transthoracic echocardiography (TTE). TTE revealed that morphological right ventricle on right and dilated and aorta was originated from right ventricle considering ventriculoarterial discordance. Also, we noticed a communication between both atriums. Then, we performed a contrast-enhanced spiral thorax computed tomography (CT). CT scan confirmed the diagnosis of atrial level repair of transposition of great arteries (TGA). CT scan revealed that morphological dilated right ventricle on the right, morphological left ventricle on the left, aorta originated from right ventricle, pulmonary artery originated from left ventricle, morphological left atrium was drained to right ventricle via a patch that directs pulmonary venous blood to the tricuspid valve and into the right ventricle, and an atrial baffle diverts blood from both the superior vena cava and the inferior vena cava across to the mitral valve and left ventricle, which ejects blood to the pulmonary artery (Figure 1).

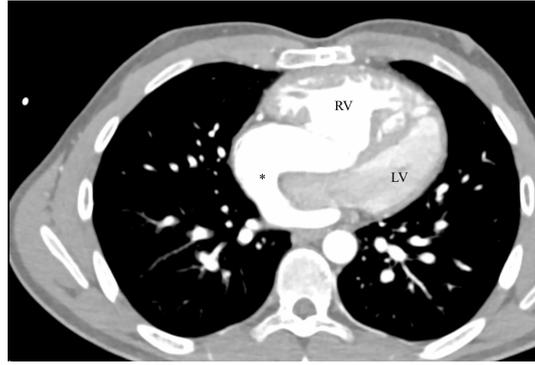


Figure 1

Contrast-enhanced CT image of atrial repair of dextro transposition of great arteries

Interestingly, we noticed that there was a single coronary artery anomaly arising from left coronary sinus of valsalva. An anomalous right coronary artery (RCA) arising from left main coronary trunk passes anteriorly to the aorta before reaching the atrioventricular groove (Figure 2).

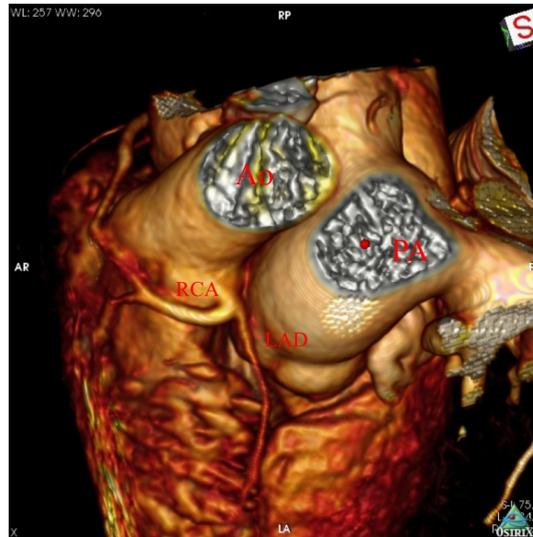


Figure 2

Three-dimension reconstruction shows anomalous right coronary artery arising from left main coronary artery trunk pass anteriorly to the aorta.

Discussion

In angiographic studies, the incidence of RCA origin from the left aortic sinus is 0.17–0.38%³. The anomalous origin of RCA can be associated with bicuspid aortic valve, mitral valve prolapsus, ventricular septal defects and congenital heart diseases³. Nevertheless, a single coronary artery is seen quite rare in patients with d-TGA. Single left coronary artery is seen more rare compared to single right coronary artery in patients with d-TGA (3% vs. %9.5)⁴. Coronary artery spasm and myocardial ischemia can possibly likely occur because of long and different anatomical course of single coronary artery. When right coronary artery arises anomalously from the left sinus of valsalva, it often pursues a course between the two great vessels and is especially prone to compression during ventricular diastole lead to high risk of sudden death⁵. However, anomalous RCA arising from left main coronary trunk passes anteriorly to the aorta in our case. Since coronary artery reimplantation is part of the repair of d-TGA, presurgical coronary angiographic documentation is helpful. Knowledge of the presence of coronary

anomalies, particularly a single coronary artery, can help determine the most appropriate surgical approach in patients with TGA.

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