

An Anomalous Right Coronary Artery with Interarterial Course Diagnosed by Multislice Computed Tomography

İnterarteriyal Yerleşimli Sağ Koroner Arter Anomalisinin Çok Kesitli Bilgisayarlı Tomografi ile Tanısı

Şerafettin Demir¹, Zeynep Karakaya², Mücahit Tüfenk³, Abdi Bozkurt⁴

¹ Department of Cardiology, Adana State Hospital, Adana, Turkey

¹ Adana Devlet Hastanesi, Kardiyoloji Kliniği, Adana, Türkiye

² Department of Emergency Medicine, Adana State Hospital, Adana, Turkey

² Adana Devlet Hastanesi, Acil Tıp Kliniği, Adana, Türkiye

³ Department of Cardiology, Kızıltepe State Hospital, Mardin, Turkey

³ Kızıltepe Devlet Hastanesi, Kardiyoloji Kliniği, Mardin, Türkiye

⁴ Department of Cardiology, Faculty of Medicine, Cukurova University, Adana, Turkey

⁴ Çukurova Üniversitesi Tıp Fakültesi, Kardiyoloji Anabilim Dalı, Adana, Türkiye

ABSTRACT

Coronary artery anomalies are potentially life-threatening anatomic variants that occur in approximately 1% of patients. Many of these anomalies are clinically benign; however, others are associated with serious morbidity. We describe the case of a patient in whom evaluation of angina pectoris revealed an anomalous right coronary artery arising from the left coronary sinus. At the coronary angiography the proximal segment of the right coronary artery was diffusely narrowed. Multislice computed tomography coronary angiography revealed a malignant anomalous right coronary artery.

Key Words: Coronary angiography; multislice computed tomography; coronary vessel anomalies.

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ÖZET

Koroner arter anomalileri hastaların yaklaşık %1'inde karşılaşılabilen ve hayatı tehdit eden anatomik varyantlardır. Bu anomalilerin büyük bir çoğunluğu benign olmasına rağmen bazıları anlamlı düzeyde morbiditeye sahiptir. Bu olguda sol koroner sinüsten köken alan sağ koroner arter anomalisi olan ve anjina pektoris tarifleyen bir hasta ele alındı. Olgumuzda koroner anjiyografide sağ koroner arterin proksimal segmenti difüz olarak daralmıştı. Çok kesitli bilgisayarlı tomografi koroner anjiyografide malignant sağ koroner arter anomalisi saptandı.

Anahtar Kelimeler: Koroner anjiyografi; çok kesitli bilgisayarlı tomografi; koroner damar anomalileri.

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Yazışma Adresi/
Correspondence

Dr. Şerafettin Demir

Adana Devlet Hastanesi
Kardiyoloji Kliniği, Adana-Türkiye

e-posta
demirkardiyoloji@hotmail.com

INTRODUCTION

Among coronary artery anomalies, anomalous coronary artery from the opposite sinus poses a relatively higher risk of sudden death, particularly in the young and when the anomalous artery courses between the ascending aorta and pulmonary trunk. It is called “malignant” because the right coronary artery (RCA) can undergo compression between the aorta and the pulmonary trunk, especially during exercise, and this carries the risk of sudden cardiac death. We are reporting a rare case of anomalous origin of right coronary artery from the left posterior aortic sinus (left sinus of valsalva). At the coronary angiography, beside a normal distal segment, the proximal segment of the RCA was diffusely narrowed. Multislice computed tomography (CT) coronary angiography revealed a malignant anomalous RCA.

CASE REPORT

A 43-year-old male patient was admitted to our clinic with atypic chest pain. In his history coronary angiography had been performed due to chest pain seven years ago. Left coronary system had been found normal. However, the RCA had not been able to be selected. Thus, it had been evaluated by using opaque injection to the aorta which suggested normal anatomy. The patient has no risk factors for coronary disease. He was discharged after a still follow up with no changes on electrocardiogram and cardiac enzymes. The patient had to be hospitalized because of angina pectoris two days later again. Repeat coronary angiography revealed normal anatomy of the left coronary system. The RCA could not be selected despite of using Judkins R4, R3 and R5, and Amplatz R1 catheters. A poor image could be obtained with Amplatz L2 suggesting the RCA to be originated from the left sinus of valsalva. Beside a normal distal segment, the proximal segment of the RCA was diffusely narrowed (Figure 1). Multislice CT was performed because of suspicion of interarterial coursing the RCA. On 16 slice CT, the RCA was arising from the left sinus of valsalva. Proximal segment of the RCA was coursing and compressing between the aorta and the pulmonary artery (Figure 2). Measurement of diameters for proximal and distal segments of the RCA were 1 mm and 5 mm, respectively. Surgical treatment was advised and medication including beta-blockers and acetylsalicylic acid was initiated. The patient refused surgery and has been asymptomatic at follow-up.

DISCUSSION

Although anomalous origin of the RCA is a rare congenital pathology, it has clinical significance because this

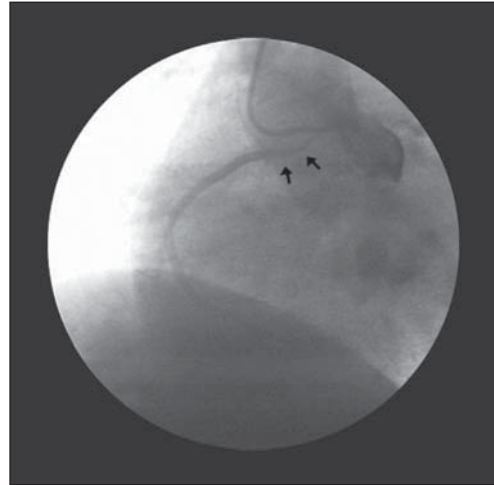


Figure 1. Coronary angiography showed unusual origin and proximal narrowing of the right coronary artery (arrows).

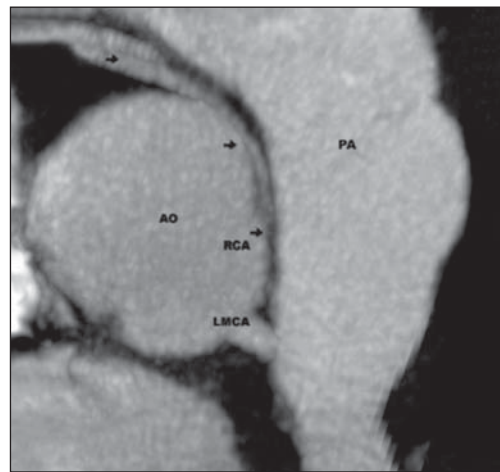


Figure 2. Multislice computed tomography showed the right coronary artery (RCA) originating from the left sinus of Val-salva (arrows). Proximal segment of the RCA was coursing and compressing between the aorta (AO) and the pulmonary artery (PA).

condition may lead to myocardial infarction and sudden cardiac death^(1,2). In this anomaly, the RCA generally co-courses between the aorta and the pulmonary artery⁽³⁾. The findings described above are characteristic of a malignant RCA. It is called “malignant” because the RCA can undergo compression between the aorta and the pulmonary trunk, especially during exercise, and this carries the risk of sudden cardiac death⁽⁴⁾. Although coronary angiography is the gold standard for the evaluation of coronary artery disease, it is not an optimal method for the evaluation of anomalies of coronary arteries with unusual orifice. Selective

catheterization is difficult because of unusual location of the origin of coronary artery as in our patient⁽⁵⁾. Moreover, the course of coronary artery is difficult to obtain because of relation to other structures⁽⁵⁾. Multislice CT demonstrated superior imaging capability compared to conventional coronary angiography in demonstrating the origin, course and relationship with other vessels and chambers of anomalous coronary artery^(5,6). We also could not perform selective catheterization of the RCA and current diagnosis was achieved by multislice CT. The optimal treatment for this anomaly is controversial. Some authors propose surgical treatment such as translocation, ostioplasty or bypass grafting⁽⁷⁻⁹⁾. However, it was reported that medical treatment with beta-blockers was also effective in resolving the symptoms^(10,11). Our patient is on beta-blocker therapy and is followed-up asymptomatic.

In conclusion, anomalous origin of the RCA should be considered in patients whose RCA is not able to be selected during conventional coronary angiography.

CONFLICT of INTEREST

None declared.

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