



Single Coronary Ostium - Successful Percutaneous Coronary Intervention in a Patient with Subacute Coronary Syndrome: A Case Report

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Abstract

Background: The abnormal origin of the left coronary artery (LCA) from the right coronary cusp (RCC) is a very rare finding. We report a successful percutaneous coronary intervention (PCI) in a patient presenting with a subacute coronary syndrome and abnormal origin of the LCA from the RCC.

Case Presentation: A 86-year-old female presented at our emergency department with worsening of exercise related angina and shortness of breath. The coronary angiography showed a single coronary ostium with a high grade stenosis in the proximal (prox.) right coronary artery (RCA). The RCA could not be intubated with standard guiding catheters. After a XB RCA guiding catheter was placed around the right coronary ostium balloon angioplasty with stenting was performed successfully.

Conclusion: This article reports a case of single coronary ostium, where the LCA arising from the right coronary cusp with subacute coronary syndrome that was treated with successful PCI.

Keywords: Percutaneous Coronary Intervention (PCI); Right Coronary Artery (RCA); Left Main Artery (LCA)

Introduction

Coronary anomalies are rare cardiac conditions which are estimated between 0,1% and 1,3% [1-8] according to several studies. The incidence of the left main artery (LCA) originating from the right sinus of Valsalva is 0,017% [1]. Additionally, coronary artery anomalies presenting with acute coronary syndrome are also uncommon [14]. Hereby, we report a case of the LCA arising from the right coronary cusp, sharing the common ostium with the right coronary artery (RCA) in a 86 year-old female who presented with worsening of exercise related angina and shortness of breath.

Case Presentation

A 86 year old female with hypertension and hyperlipidemia presented to the Emergency Department (ED) with progressively worsening of shortness of breath on exertion and left sided chest pain that she had been experiencing for the past 1-2 weeks. Her blood pressure was 165/85 mmHg and her heart rate was 77/bpm. by the time of presentation. The electrocardiogram showed sinus rhythm and new T wave inversion in II, III, aVF (Figure 1). The echocardiogram on admission showed a reduced left ventricu-

lar ejection fraction (LVEF) of 40% and hypokinesia of the inferior wall. The value of high sensitive troponin peaked at 41,91 pg/ml (ULN 0-14 pg/ml). The patient underwent invasive coronary angiography the day after admission. A single coronary ostium was diagnosed (Figure 2 A, B). Besides separate arising of both RCA und LCA from the right sinus of Valsalva was observed and a high-grade stenosis was noticed in proximal RCA (Figure 2 C). Due to advanced age, surgery was not recommended and it was decided to implement a coronary angioplasty with stenting. With several guiding catheters like JR 4,0, Amplatz 0,75 and 1,0, AR I and II RCA could not be intubated. After a XB RCA guiding catheter (6F, 100cm, Cordis) was placed around the right coronary ostium, a .014" coronary long wire introduced into the RCA through the lesion, balloon angioplasty was performed with a 2,5x12mm (TREK, Abbott) balloon. A 3,0x12 mm and 2,75x9 mm drug eluting stent (Coroflex, ISAR Neo, Braun) was then implanted. After successful prox. RCA revascularization, final angiography showed no residual stenosis. (Figure 2 D). The patient was optimized with guideline directed medical therapy. She was referred to the cardiac rehabilitation and discharged.

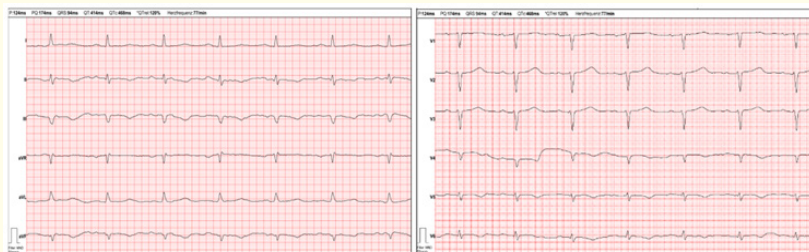


Figure 1: 12-lead electrocardiogram showing new T inversion in II,III,aVF, V4-6.

Figure 1: Lead electrocardiogram showing new T inversion in II, III, aVF, V4-6.

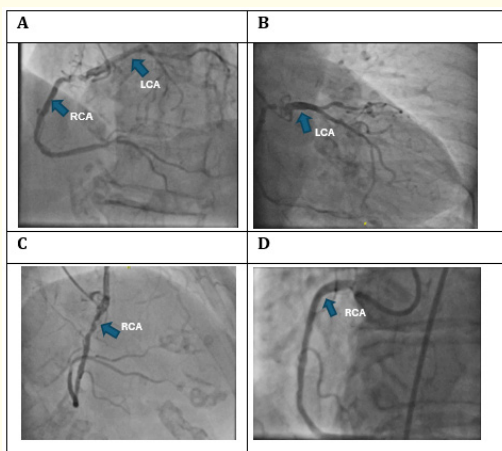


Figure 2: A Coronary angiography using 3 DRC, LAO 40, B Coronary angiography LAO 30 Cranial 30, C Coronary angiography, RAO 30 Cranial 30, revealing significant stenosis at the prox. RCA (arrow), D Coronary angiography using XB RCA guiding catheter after stent deploying.

Discussion

Normal coronary anatomy includes a wide spectrum and minor variations in the branching pattern such as septal perforator and diagonal branches are common [1, 8]. On the other hand, the coronary artery anomalies are associated with marked deviations from the normal pattern and most anomalies discovered as incidental findings during the coronary angiography or autopsy [1]. Some coronary artery anomalies can lead to ischemia, while others predispose to complications such as spasm or the development of atheromatous plaques [10]. The unknown anomalies can cause complications during a procedure [9]. In a study from Yamanaka and Hobbs [1] with 126,595 patients who underwent coronary angiograms 1461 patients (1,15%) showed anomalies of origin and distribution and the incidence of the left main trunk originating from the right sinus of Valsalva was 0,017%.

The present report shows the use of an effective PCI approach in the setting of a rare coronary anomaly of the origin of the left coronary artery. Both Lee., *et al.* [12] and Shah., *et al.* [13] reported cases of PCI in a patient with an anomalous left main originating from the right sinus of Valsalva that was successfully treated. Unlike the case of Shah., *et al.* [13], our patient showed the similar LCA as in the case of Lee [12] from the RCC separately from the right coronary artery.

Our patient had multiple cardiac risk factors, which were associated with the atherosclerosis of the coronary artery, resulting with the high-grade stenosis of the proximal RCA leading to heart failure and the progressive symptoms. In this case, the anomalous left main trunk origin was a coincidental finding. We performed coro-

nary angioplasty with stent deployment and started with guideline directed medical therapy. Unlike the similar cases from Shtembari, *et al.* [15] and Castro-Lara, *et al.* [16] we could carry out a successful coronary angioplasty with stent deployment despite a complex anatomy. In both cases the patients were discharged with optimal medical treatment.

Conclusion

We present a patient with a rare anomalous LCA originating from the RCC accompanied with subacute coronary syndrome, who underwent a successful percutaneous coronary intervention.

Bibliography

1. Yamanaka O and Hobbs RE. "Coronary artery anomalies in 126,595 patients undergoing coronary arteriography". *Catheterization and Cardiovascular Interventions* 21 (1990): 28-40.
2. Tuo G., *et al.* "Incidence and clinical relevance of primary congenital anomalies of the coronary arteries in children and adults". *Cardiology Young* 23 (2013): 381-386.
3. Labombarda F., *et al.* "Major congenital coronary artery anomalies in a paediatric and adult population: a prospective echocardiographic study". *European Heart Journal: Cardiovascular Imaging* 15 (2014): 761-8.
4. Pelliccia A., *et al.* "Prospective echocardiographic screening for coronary artery anomalies in 1,360 elite competitive athletes". *American Journal of Cardiology* 72 (1993): 978-979.
5. Davis JA., *et al.* "Major coronary artery anomalies in a pediatric population: incidence and clinical importance". *Journal of the American College of Cardiology* 37 (2001): 593-597.
6. Maron BJ., *et al.* "Sudden death in young competitive athletes. Clinical, demographic, and pathological profiles". *JAMA* 276 (1996): 199-204.
7. Angelini P. "Novel imaging of coronary artery anomalies to assess their prevalence, the causes of clinical symptoms, and the risk of sudden cardiac death". *Circulation: Cardiovascular Imaging* 7 (2014): 747-754.
8. Schlessinger MJ. "Significant variations in the anatomic pattern of the coronary vessels". *Blood Heart Circulation* 13.1 (1940): 93-97.
9. Di Guglielmo L and Montemartini C. "Variations anatomiques et anomalies congénitales des artères coronaires. Expérience personnelle [Anatomical variations and congenital anomalies of the coronary arteries. Personal experience (author's transl)]". *Annals of Radiology (Paris)*, 18.3 (1975): 255-257.
10. Farias DC C., *et al.* "Anomalous Origin of the Left Coronary Artery from the Right Sinus of Valsalva". *Revista Brasileira de Cardiologia Invasiva* 21.1 (2013): 82-84
11. Lee JH and Parl JS. "Successful percutaneous coronary intervention in the setting of an aberrant left coronary artery arising from the right coronary cusp in a patient with acute coronary syndrome: a case report". *BMC Cardiovascular Disorders* 17 (2017): 186.
12. Shah N., *et al.* "Percutaneous Coronary Intervention of an Anomalous Left Coronary Artery Arising from the Right Sinus of Valsalva". *Heart Lung Circulation* 24 (2015): e123-126.
13. Marchesini J., *et al.* "Coronary artery anomalies presenting with ST-segment elevation myocardial infarction". *Clinical Practice* 1 (2011): e 107.
14. Shtembari J., *et al.* "Anomalous Origin of the Left Coronary Artery From the Right Coronary Cusp: A Case Report". *Cureus* 15.3 (2023): e35711.
15. Castro-Lara J., *et al.* "Anomalous origin of the left coronary artery with origin in the right coronary artery from a single coronary ostium associated with multivessel coronary artery disease: case report and literature review". *International Journal of Research in Medical Sciences* 12 (2024): 935-938.