

DOI: 10.5152/etd.2018.0057

Manuscript Type: Case Report

Title: Double right coronary artery from single ostia

Running Title: Double RCA from single ostia

Authors: Hossein Doustkami¹, Afshin Habibzadeh²

Institutions: Department of Cardiology, Ardabil University of Medical Sciences, Ardabil, Iran¹

Department of Internal Medicine, Ardabil University of Medical Sciences, Ardabil, Iran²

Address for Correspondence: Afshin Habibzadeh Afshin.habibzadeh@gmail.com

Cite this article as: Doustkami H, Habibzadeh A. Double right coronary artery from single ostia. Erciyes Med J 2018; DOI: 10.5152/etd.2018.0057

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as: Doustkami H, Habibzadeh A. Double right coronary artery from single ostia. Erciyes Med J 2018; DOI: 10.5152/etd.2018.0057

©Copyright 2018 by Erciyes University Faculty of Medicine - Available online at www.erciyesmedj.com

ABSTRACT

Coronary anomalies are rare and usually found incidentally during coronary angiography. Double right coronary artery (RCA) is a rare anomaly which could originate from single or separate ostia. We report a 68-year-old male with dyspnea on exertion and shortness of breath during the last month. Electrocardiogram and echocardiography were normal with only moderate pulmonary artery hypertension. During elective coronary angiography (CAG) we observed two separate RCAs from a single ostium, both had no significant atherosclerotic lesion. Coronary anomalies are rare, but due to their clinical significance, it is important to diagnose these anomalies for better management.

Keywords: Coronary artery anomaly, double right coronary anomaly, coronary angiography

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as: Doustkami H, Habibzadeh A. Double right coronary artery from single ostia. *Erciyes Med J* 2018; DOI: 10.5152/etd.2018.0057

INTRODUCTION

Application of coronary angiography (CAG) have caused increased diagnosis of coronary artery anomalies and help understand these anomalies (1). In most cases, the anomalies of origin and distribution are reported as the common forms (1). Double right coronary artery (RCA) is one of the rarest coronary anomalies with benign nature. Double RCAs are usually from two separate ostia or single ostia (2-6).

Here, we present a patient with double RCA from single ostia.

CASE REPORT

We report a 68-year-old male, heavy smoker (40 pack/year) with history of chronic obstructive pulmonary disease and cor pulmonale was visited with the complaint of dyspnea on exertion and shortness of breath during the last month. In physical examination, JVP was elevated, other findings were normal. The chest X-ray and laboratory findings were nonspecific. The electrocardiogram showed normal sinus rate, tachycardia with p-pulmonale. Transthoracic echocardiography findings was normal with normal LVEF and moderate pulmonary artery hypertension (systolic pulmonary artery pressure= 54 mmHg). Due to the chest pain on exertion, patient underwent elective CAG which demonstrated two separate RCA from a single ostium (figure 1. a, b). Both RCAs had no significant atherosclerotic lesion. The origin and course of the left coronary arteries were normal.

DISCUSSION

Most coronary anomalies are detected as incidental findings during CAG. Although they are uncommon, they could have atherosclerosis and cause arrhythmia and acute coronary

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as: Doustkami H, Habibzadeh A. Double right coronary artery from single ostia. *Erciyes Med J* 2018; DOI: 10.5152/etd.2018.0057

syndrome (7, 8). Double RCA is a rare coronary anomaly; two RCAs coursing toward the right atrioventricular groove, originating marginal branches, terminating by giving off the posterior descending artery in the posterior interventricular groove (9). Double RCA would have single ostium or separate ostium with two arteries arising separately (4, 9).

We reported a case of double RCA from single ostium in a 68-year-old male as an incidental finding in CAG. In the previous studies it is reported to be predominant in male patients (9-11). As in our case, the CAG findings besides coronary anomaly was normal, it is possible that the patient's dyspnea could be due to the underlying chronic obstructive pulmonary disease and cor pulmonale and the double RCA would be a benign incidental finding.

Patients with double RCA have high prevalence of atherosclerotic coronary artery disease (CAD). These patients are at increased risk of unsuspected complications of atherosclerotic CAD (10, 11). These patients could also show positive stress test while they have no significant stenosis. Three different modalities could be used to diagnosis double RCA, including conventional angiography as gold standard, multi-detector computed tomography and coronary magnetic resonance angiography (CMRA); in first two, patients are exposed to ionizing radiation, while CMRA is a safe and non-invasive modality (11). Although in the literature, the most reported cases of RCA are reported from Turkey, there is no defined correlation regarding the role of ethnicity in its prevalence (11).

CONCLUSION

Coronary anomalies are rare, but due to their clinical significance, it is important to diagnose these anomalies for better management.

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as: Doustkami H, Habibzadeh A. Double right coronary artery from single ostia. *Erciyes Med J* 2018; DOI: 10.5152/etd.2018.0057

Authorship

HD: diagnosed the patient. AH and HD: managed the patient's treatment. HD and AH: contributed to the first writing of the manuscript, doing the final editing and translation.

Informed Consent: Written informed consent was obtained from patients who participated in this study.

Peer-review: Externally peer-reviewed.

Conflict of Interest: The authors declare that there is no conflict of interest that could be perceived as prejudicing the impartiality of the research reported.

Financial Disclosure: The authors declared that this study has received no financial support.

REFERENCES

1. Sohrabi B, Habibzadeh A, Abbasov E. The incidence and pattern of coronary artery anomalies in the north-west of iran: a coronary arteriographic study. *Korean Circ J* 2012;42(11):753-60.
2. Selcoki Y, Yilmaz OC, Er O, Eryonucu B. Double right coronary artery: a report of two cases. *Clinics (Sao Paulo)* 2010;65(4):449-51.
3. Acet H, Ozyurtlu F, Bilik MZ, Ertas F. A rare coronary anomaly: atypical double right coronary artery with an acute inferior myocardial infarction. *Korean Circ J* 2012;42(3):208-11.
4. Kheirkhah J, Habibifar A, Moladoust H. A case of double right coronary artery with separate ostium. *J Tehran Heart Cent* 2014;9(3):135-6.
5. Rao MS, Jayaram AA, Ramachandran P, Poondru RR. Dual RCA: culprit or companion. *BMJ Case Rep* 2015;2015. pii: bcr2015210841.

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as: Doustkami H, Habibzadeh A. Double right coronary artery from single ostia. *Erciyes Med J* 2018; DOI: 10.5152/etd.2018.0057

6. Sinha SK, Singh S, Chaturvedi V, Agrawal P, Razi M, Mahrotra A, et al. Atypical Double Right Coronary Artery Presenting With Acute Coronary Syndrome, Cardiogenic Shock and Complete Heart Block. *J Clin Med Res* 2017; 9(3):221-4.
7. Karabay KO, Catakoglu AB, Demiroglu IC, Aytekin V. Double right coronary artery originating from separate orifices - A case report and review of the literature. *Int J Cardiol* 2007;118:e6–e7.
8. Rohit M, Bagga S, Talwar KK. Double right coronary artery with acute inferior wall myocardial infarction. *J Invasive Cardiol* 2008; 20:E37–E40.
9. Sari I, Kizilkan N, Sucu M, Davutoglu V, Ozer O, Soydinc S, Aksoy M. Double right coronary artery: report of two cases and review of the literature. *Int J Cardiol* 2008;130:e74-e77.
10. Chien TM, Chen CW, Chen HM, Lee CS, Lin CC, Chen YF. Double right coronary artery and its clinical implications. *Cardiol Young* 2014;24:5-12.
11. Abolbashari M, Kar S, Marmol-Velez A, Ramos-Duran L, Mullins C, Mukherjee D, et al. Double right coronary artery and its clinical significance: Review of the literature. *Cardiovasc Revasc Med* 2017;18:632-5.

Figure legends:

Figure 1 a, b. Double right coronary arteries from a single ostium

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as: Doustkami H, Habibzadeh A. Double right coronary artery from single ostia. *Erciyes Med J* 2018; DOI: 10.5152/etd.2018.0057



Figure 1a

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as: Doustkami H, Habibzadeh A. Double right coronary artery from single ostia. *Erciyes Med J* 2018; DOI: 10.5152/etd.2018.0057

©Copyright 2018 by Erciyes University Faculty of Medicine - Available online at www.erciyesmedj.com



Figure 1b.

This article has been accepted for publication and undergone full peer review but has not 8
been through the copyediting, typesetting, pagination and proofreading process, which may
lead to differences between this version and the Version of Record. Please cite this article
as: Doustkami H, Habibzadeh A. Double right coronary artery from single ostia. *Erciyes Med J*
2018; DOI: 10.5152/etd.2018.0057

©Copyright 2018 by Erciyes University Faculty of Medicine - Available online at
www.erciyesmedj.com