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CASE REPORT

COMPLETE PERCUTANEOUS REVASCULARIZATION OF A SINGLE CORONARY OSTIUM IN A 84 YEAR-OLD WOMAN

ABSTRACT

Coronary arteries originating from a single coronary ostium is a rare condition. The incidence is 0.03% of patient undergoing diagnostic coronary angiography. Approximately 20 possible variations of single coronary artery have been described. Of these, single coronary artery arising from the right sinus of valsalva are extremely rare. Some of the patients are clinically silent, except for cases in which a coronary artery passes between the pulmonary artery and aorta, which can present with sudden death especially in the athletes. Yet, most of the patient can present with recurrent ischemia or heart failure at younger age. Treatment is still controversial and no guidelines for treatment of this condition exist. We report the case of an octogenarian patient with acute inferior myocardial infarction who was managed by primary percutaneous coronary intervention (PCI) to the single coronary ostium.

Key Words: Geriatrics; Coronary Vessel Anomalies; Inferior Wall Myocardial Infarction.



OLGU SUNUMU

TEK KORONER OSTIÜMLÜ 84 YAŞINDAKİ HASTADA TAM PERKÜTAN KORONER REVASKÜLARİZASYON

Öz

Tek ostium kaynaklı koroner arterler nadir görülebilen bir koroner arter anomalisi çeşiti olup, tanısal amaçlı koroner anjiyografi yapılan hastalarda sıklığı çeşitli kaynaklarda % 0.03 olarak belirlenmiştir. Bu doğumsal anomalinin şu ana kadar 20 çeşit varyasyonu tanımlanmıştır. Bunlardan sağ sinus valvasva kaynaklı tek koroner arter anomalisi oldukça nadir görülen bir durumdur. Hastaların bir kısmı asemptomatik olabilmekte beraber, koroner arterlerin pulmoner arter ile aortanın arasında seyrettiği durumlarda ani kardiyak ölüm ilk prezantasyon bulgusu olabilmektedir. Yine birçok hastada erken yaşta tekrarlayan koroner iskemik olaylar veya kalp yetersizliği gelişimi de hastalığın seyri sırasında karşımıza çıkabilmektedir. İleri yaşa kadar ulaşmış vaka sayısı oldukça azdır. Tedavi seçenekleri tartışmalı olup, bu konuda tanımlanmış bir kılavuz önerisi yoktur. Bizim vakanızda akut inferior miyokard infarktüsü ile yatırılan, acil olarak yapılan koroner anjiyografide sağ sinus valsalva kaynaklı tek koroner ostium anomalisi bulunan 84 yaşındaki hastada başarılı primer perkütan koroner girişim olgusunu sunulmaktadır.

Anahtar Sözcükler: Geriatrik; Inferior Miyokard İnfarktüsü; Koroner Arter Anomalisi.

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INTRODUCTION

Single coronary artery is a rare congenital anomaly that may be associated with sudden cardiac death after exercise and angina in the young age. We present the case of an old patient with acute inferior myocardial infarction who was managed by primary percutaneous coronary intervention (PCI) performed through a single coronary artery originating from a single ostium in the right sinus of Valsalva.

CASE REPORT

An 84-year old woman was admitted to the emergency room with severe retrosternal chest pain. She had a medical history of hypertension and diabetes mellitus. On admission, she had a blood pressure of 100/70 mmHg, a regular pulse of 65 beats per minute, and a breath rate of 12 per minute with 97% of partial oxygen saturation. Electrocardiography revealed a regular sinus rhythm and persistent ST segment elevation in the leads D2, D3, and aVF. The patient was immediately transferred to the catheterization laboratory. Left coronary artery catheterization with Judkins left diagnostic

catheter did not demonstrate any vessel originating from the left coronary sinus. Right coronary artery catheterization with Judkins right guiding catheter demonstrated that right coronary artery (RCA), left anterior descending artery (LAD) and the circumflex artery (Cx) were all originating from a solitary ostium from the right sinus of Valsalva. The RCA had a 100% occlusion short after acute marginal branch. The Cx supplied its normal territory without significant obstruction, and the LAD had a 70% ostial obstruction (Figure 1). We decided to perform PCI of the RCA and LAD. Firstly a 0.014 floppy guidewire crossed the totally occluded segment of the RCA. Even after wiring, TIMI-2 flow was established, and 2.75 x 28 mm bare metal stent (Gazelle, Biosensors, Singapore) was deployed successfully. The control angiography showed good result without any residual stenosis or complication (Figure 2). Next, decision was then made to proceed with PCI of the LAD. Second 0.014 floppy guidewire was advanced through the ostial lesion of LAD. A 3.5x8 mm bare metal stent (Gazelle, Biosensors, Singapore) was deployed at the ostium of the LAD with excellent result (Figure 3). The patient was discharged on the fifth day after the intervention.

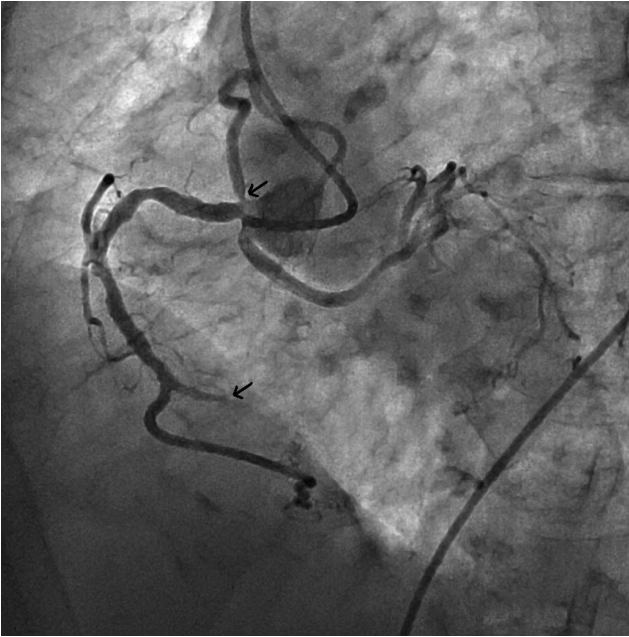


Figure 1— Coronary angiogram of single coronary ostium arising from right aortic sinus showing total occlusion of right coronary artery (RCA) in the distal segment and 70% ostial stenosis of left anterior descending artery (LAD). Arrows indicate occluded segment of RCA and ostial stenosis of LAD.

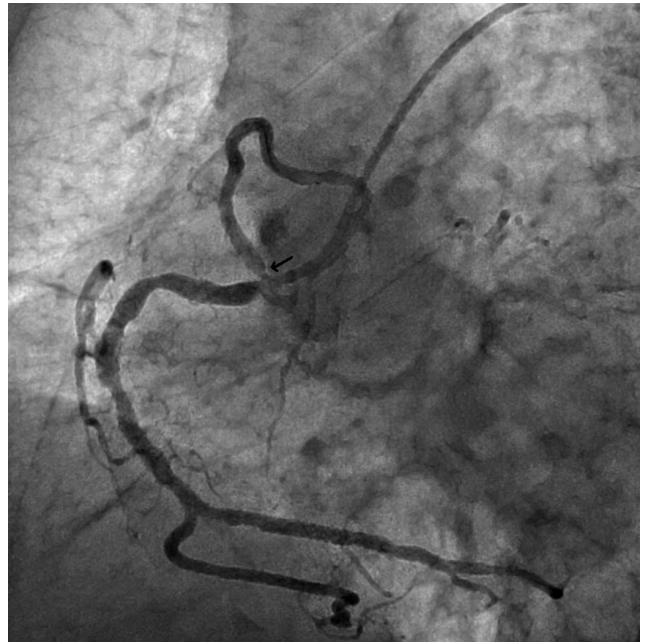


Figure 2— Coronary angiogram showing restoration of the blood flow of RCA after stent implantation and 70% ostial stenosis of LAD remains. Arrow indicates ostial stenosis of LAD.

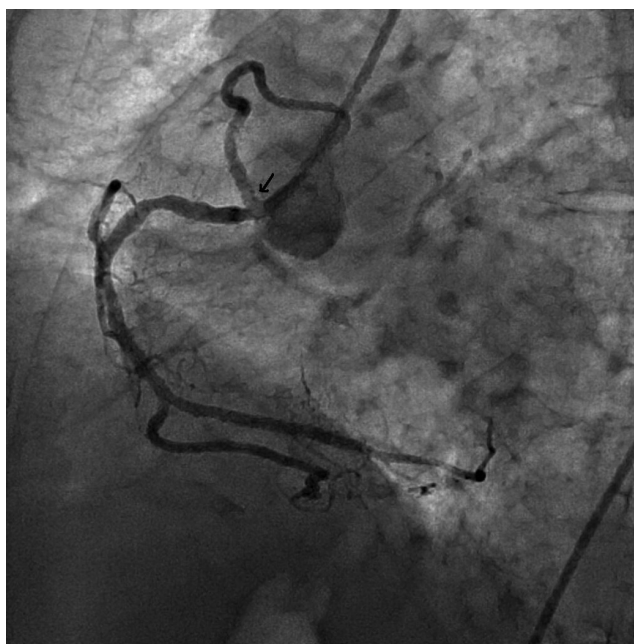
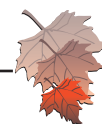


Figure 3— Coronary angiogram showing good result after stent implantation of LAD. Arrow indicates no residual stenosis of LAD.

DISCUSSION

The coronary circulation arising from a single coronary ostium is rare, with incidence estimated at approximately less than 0.03% of general population (1). It was first reported by Hyrtl in 1841 (2,3). Shirani et al, described a classification that is anatomically based, depending on the origin and pattern of distribution of the coronary arteries (4). In this classification system, type I represents an ostium of the coronary artery originating from the left aortic sinus, and type II indicates that an ostium of the coronary artery originates from the right aortic sinus. Subtypes depend on the course of the coronary arteries. These patients are usually asymptomatic. Nevertheless ischemia can occur due to anomalous pathway in which a coronary artery passes between pulmonary artery and aorta (5). These patients can present with sudden death in the young age due to extrinsic compression of the coronary artery (6,7). The patients usually undergo diagnostic angiography as a result of atypical chest pain or post-cardiac arrest. Rarely, patients present with acute myocardial infarction. The literature for myocardial infarction of single coronary ostium shows quite a few case reports related to this item (8,9). In our case, the patient who did not experience symptoms of angina until the old age presented with acute myocardial infarction. She had hypertension

and diabetes mellitus as a strong risk factor for coronary artery disease. Predisposition to autonomic neuropathy as a complication of diabetes mellitus may be responsible from the late clinical presentation. Technical difficulties with undertaking simple non-invasive tests such as treadmill or cycle exercise at that age may also have a role in late diagnosis.

PCI bears some difficulties due to the unusual course of the coronary artery and angle of the coronary ostium. Although serious complications, such as coronary dissection, obstruction of the untargotted coronary artery as a result of the plaque shifting or extension of the dissection can occur during the procedure. The ostium of the coronary arteries are usually detected during coronary angiography, but exact course determination and relationship are difficult to visualize. The multi detector computed tomography is useful for accurate visualization of the entire course of the coronary artery. In conclusion, PCI on a single coronary ostium can be complicated because of the myocardium's sole source of blood, so the appropriate equipment and the provision of surgical back-up are essential for the technical success of the intervention.

REFERENCES

1. Roberts WC. Major anomalies of coronary arterial origin seen in adulthood. *Am Heart J* 1986;111:941-63. (PMID:3518378).
2. Lipton MJ, Barry WH, Obrez I, Silverman JF, Wexler L. Isolated single coronary artery: diagnosis, angiographic classification, and clinical significance. *Radiology* 1979;130:39-47.
3. Neil DA, Bonser RS, Townend JN. Coronary arteries from a single coronary ostium in the right coronary sinus: a previously unreported anatomy. *Heart* 2000;83:5-9.
4. Shirani J, Roberts WC. Solitary coronary ostium in the aorta in the absence of other major congenital cardiovascular anomalies. *J Am Coll Cardiol* 1993;21:137-43. (PMID:8417054).
5. Van Campen LCMC, de Cock C, Bronzwaer JGF, et al. Single coronary artery: morphological and functional evaluation by magnetic resonance imaging. *Eur Heart J* 1995;16:2003-4. (PMID:8682040).
6. McManus BM, Waller BF, Graboyes TB, et al. Exercise and sudden death. Part I. *Curr Probl Cardiol* 1981;6:1-89. (PMID:7333132).
7. Taylor AJ, Rogan KM, Virmani R. Sudden cardiac death associated with isolated congenital coronary artery anomalies. *J Am Coll Cardiol* 1992;20:640-7. (PMID:1512344).
8. Balci MM, Akdemir R, Kilic H, Aksoy NA. Percutaneous coronary intervention on single coronary ostium. *Kardiolog Pol* 2010;68:482-3. (PMID:20425717).
9. Raddino R, Pedrinazzi C, Zanini G, et al. Percutaneous coronary angioplasty in a patient with anomalous single coronary artery arising from the right sinus of Valsalva. *Int J Cardiol* 2006;10:60-2. (PMID:16859774).