

anterior descending artery (LAD) and right coronary artery (RCA). We performed PCI and stenting (3.0x14 mm) this lesion using a 6 French coronary Judkins left guiding catheter (Video 2-See corresponding video/movie images at www.anakarder.com). The patient's post-PCI course was uneventful. The patient was discharged on carvedilol, ramipril, atorvastatin and clopidogrel. We followed the patient approximately three months and found no ischemic symptom.

Discussion

Dextrocardia, usually termed as the location of the heart mainly in the right chest and with the cardiac long axis directing to the right and inferiorly, occurs rarely with a frequency of 1/10 000 in general population. Coronary angiography for dextrocardia was first reported in 1974 in a patient who underwent left ventricular aneurysmectomy (2). Coronary artery bypass surgery in a patient with dextrocardia was described in 1982 (3). Percutaneous coronary intervention in dextrocardia with situs inversus was first reported in 1987 (4).

In conditions when aorta is in the right side position as situs inversus and dextrocardia, most important modifications of angiography and PCI procedures are counterclockwise rotation of Judkins catheter and mirror image angiographic angles. Thus, they maintain their standard relationships to the coronary ostia. Catheters can be passed using standard technique, except that catheters are rotated in the opposite site direction. In other words, the left Judkins catheter can be used to cannulate the right-sided morphologically left coronary artery. Similarly, the right Judkins catheter manipulated to the mirror of its usual position can cannulate the left-sided morphological RCA with right-sided aortic arch. Moreyra et al. (4) who first reported case of percutaneous transluminal coronary angioplasty in dextrocardia with situs inversus, advocated using multipurpose catheters because their flexible tips allowed for easy manipulation into the coronary ostia. However, in our case both the left and right coronaries were successfully cannulated with Judkins catheters.

As unlike normally positioned hearts, right precordial pain may represent in patients with situs inversus and dextrocardia. This atypical pain in patients with situs inversus has been only described by Hynes et al. (5) in 1973. The reason for this atypical presentation is not known. Situs inversus has been previously shown to be associated with abnormal neural axis development and this may lead to variant visceral pain perception (6). Our patient also the pain was located in the retrosternal and right anterior chest.

Few cases with situs inversus and dextrocardia were reported up to date in literature previously (7, 8). However, there is only one previous case report of performing PCI in situs inversus and dextrocardia in Turkey. Barış et al. (9) reported that a coronary intervention successfully carried out on a severe stenosis at the proximal RCA with situs inversus and dextrocardia.

Conclusion

Standard angiographic techniques described above using opposite-direction catheter rotations and mirror-image views are useful for both angiography and angioplasty procedures in dextrocardic patients. Our experience in this case demonstrates that coronary angiography and intervention can be performed in cases of dextrocardia with using simple standard catheterization techniques.

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Video 1. Coronary angiography (LAO caudal) views of a 70% stenotic lesion in the mid portion of the Cx artery

Cx - circumflex coronary artery, LAO - left anterior oblique

Video 2. Post PCI coronary angiography (LAO cranial) views of a TIMI 3 flow in the Cx artery after stenting

Cx - circumflex coronary artery, LAO - left anterior oblique, PCI - percutaneous coronary intervention

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Available Online Date/Çevrimiçi Yayın Tarihi: 16.05.2012

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doi:10.5152/akd.2012.129

Angina and origin of three major coronary arteries from independent ostia in right coronary sinus

Anjin ve sağ koroner sinüsten, üç majör koroner arterin bağımsız ostiyumlardan çıkışı

Introduction

Coronary artery origin abnormalities are low frequent findings in adult patients without congenital heart disease who undergo a coronary angiography (ranges from 0.3% to 1.3% in the longest registry) (1). Although more than a half of the cases are referred for angina, most of them are a discovery not related to this symptom.

Anomalous origin of the left coronary artery from the right coronary sinus (RCS) is described as a rare abnormality (0.15%) (2) and specifically the origin of all major coronary arteries from independent ostia has been reported as exceedingly rare (3). Its potential capacity to induce angina and prognosis is unknown.

Case Report

We present the case of a 75 years old man with medical history of active smoking, hypertension and hyperlipidemia referred for coronary angiography for angina. Routine cath-lab procedure started with left coronary artery catheterization attempt, but it was unsuccessful and no vessel angiography could be visualized by injecting contrast in left coronary sinus. The right coronary artery (RCA) was selectively visualized with an Amplatz catheter, and presented a non-significant long stenosis in middle segment with a 30% of luminal reduction, and a moderate stenosis (narrowing of 50-60%) in proximal segment of posterolateral branch.

A calcified tubular structure could be identified rounding the RCS next to the aortic valve root, and a voluminous subselective contrast injection revealed this structure as a vessel corresponding to the left circumflex artery (LCX, Fig. 1, Video 1-See corresponding video/movie images at www.anakarder.com), as well as another vessel in cranial position as the left anterior descending artery (LAD, Fig. 1, Video 2-See corresponding video/movie images at www.anakarder.com). Both arteries presented independent ostia between them, and from RCA (Fig. 2, Video 3-See corresponding video/movie images at www.anakarder.com). LAD showed absence of angiographic coronary stenosis. LCX presented an intense calcification, diffuse severe atherosclerosis and narrowing of a distal vessel. There were no "milking" images in proximal segments of both arteries that could suggest a trajectory between aortic and pulmonary trunks, and the computed tomography coronary angiography confirmed the trajectories of the arteries: LAD passed anterior to the pulmonary artery and LCX passed in a retroaortic position.

Due to the diffuse and severe atherosclerosis of LCX and the absence of severe stenosis in RCA territory, the patient was managed with an improvement of medical treatment to relief the angina. After 3 years, the patient is free from symptoms and has not presented major adverse cardiovascular events.

Discussion

The origin of all major coronary arteries in RCS from independent ostia is the rarest coronary abnormality described. It has not been related to sudden death, and perhaps the reason is that in all described patients, the LCX passed behind the aorta, and the LAD passed anterior to pulmonary trunk or through the ventricular septum (4, 5). In just one case has been described a course of both between the aortic and pulmonary trunks, but without evidence of ischemia in these territories (6).

The potential capacity of the abnormality that we describe to induce angina by itself is unknown. The trajectory of the LCX and LAD described do not justify myocardial ischemia by vessel compression, and in all cases described before, as well as in our case, patients presented significant coronary artery disease. On the other hand, some authors have found a correlation between LCX abnormality origin and atherosclerosis disease, suggesting that the extreme angulations in the ostia and the stretching of the artery due to its abnormal proximal segment course could promote and accelerate the atherosclerosis (7, 8).

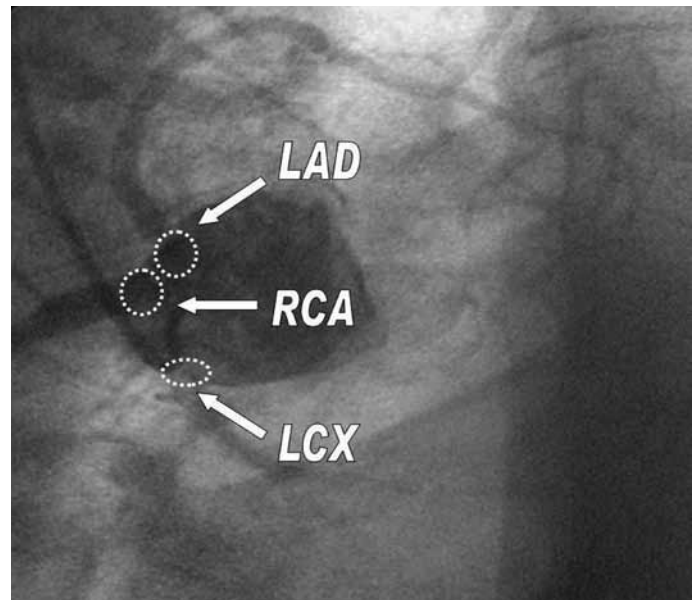


Figure 1. Detailed independent ostia of the three major coronary arteries: right coronary artery (RCA), left anterior descending artery (LAD) and left circumflex artery (LCX)

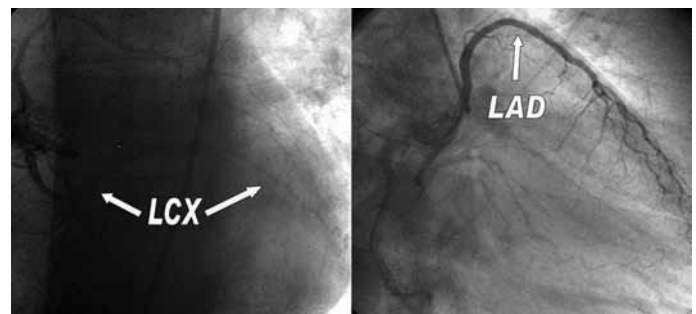


Figure 2. Independent left circumflex artery (LCX) and left anterior descending artery (LAD) origin and course from right coronary sinus

Conclusion

In light of these considerations, the prognosis of independent origin of all major coronary arteries from RCS is unknown. In our case, the improvement of medical treatment to relief angina was a successful strategy for a long term and after 3 years the patient is free from angina and did not present major adverse cardiovascular events. Probably the prognosis of this finding correlates stronger with the atherosclerosis in the coronary arteries with abnormal origin than with their proximal trajectory.

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Video 1. Left circumflex artery subselective angiography

Video 2. Left anterior descending artery selective angiography

Video 3. Right coronary artery selective angiography

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Available Online Date/Çevrimiçi Yayın Tarihi: 16.05.2012

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doi:10.5152/akd.2012.130

Antiarritmik tedaviye cevapsız supraventriküler taşikardili yenidoğanda kateter ablasyonu ile tedavi

Successful catheter ablation in a newborn with supraventricular tachycardia resistant to medical therapy

Giriş

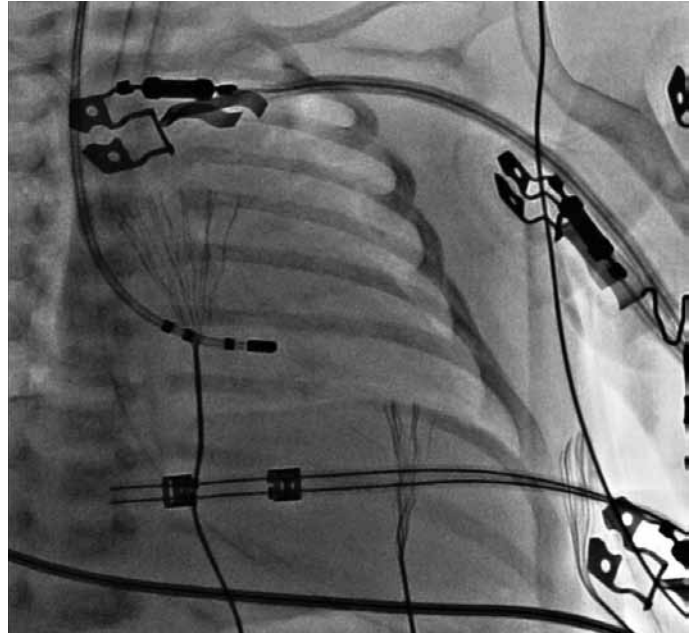
Supraventriküler taşikardi (SVT) bebeklerde semptomatik taşikardilerin en sık nedenidir. SVT'lerin çoğu aksesuar yola bağlıdır ve bunların yaklaşık %30'u yaşamın ilk yılından sonra tekrarlamaz (1). Bunlar çoğunlukla antiarritmik ilaçlar ile kontrol edilse de, çok nadiren kateter ablasyonu gerekebilir (2). Bu yazıda antiarritmik ilaç tedavisine cevap vermeyip, ventrikül disfonksiyonu gelişen ve radyofrekans (RF) ablasyon ile tedavi edilen bir yenidoğan sunuldu.

Olgu Sunumu

Üç gündür huzursuzluk şikayeti olan 17 günlük kız bebeğe infantil kolik tanısı ile önerilerde bulunulmuş ancak daha sonra taşikardisinin fark

edilmesi üzerine kliniğimize gönderilmişti. Başvuruda, yenidoğan refleksleri deprese ve emmesi zayıflamıştı. Takipnesi, taşikardisi, apekte 2-3/6 sistolik üfürümü ve hepatomegalisi vardı. Elektrokardiyografisinde (EKG) P dalgaları seçilemeyen, 280/dk hızında dar QRS'li taşikardi görüldü. Ekokardiyografide sol ventrikülde genişleme (sol ventrikül diyastol sonu çapı: 22 mm, z değeri: 2.45), hafif-orta mitral yetersizliği ve patent foramen ovale (PFO) saptandı. Sol ventrikül sistolik fonksiyonunda bozulma başlamış ve ejeksiyon fraksiyonu (EF): %53, kısalma fraksiyonu (KF): %26 idi. Adenozin ile SVT durdu, ancak kısa süre içinde tekrar başladı. Bunun üzerine 250 µg/kg yükleme sonrası, 100 µg/kg/dk olacak şekilde esmolol infüzyonuna başlandı. Taşikardi durmayınca 10 mg/kg/saat, amiodaron infüzyonuna cevap alınmayınca 2 defa daha 5 mg/kg/saat'lik ilave yükleme ile total yükleme dozu 20 mg/kg'a tamamlandıktan sonra, 10 mg/kg/gün şeklinde idame tedavisine geçildi. Bu arada birkaç defa daha adenozin ile kısa süreli olarak ataklar durduruldu. Tedaviye cevap alınmaması ve ventrikül fonksiyonlarının daha kötüleşmesi (ertesini günü EF: %44, KF: %21 idi) nedeniyle esmolol kesilerek, amiodaron propafenon (300mg/m²/gün) eklenildi ve 2 gün devam edildi. Bu tedavilere rağmen taşikardinin sürmesi ve ventrikül fonksiyonunun daha da kötüleşerek (EF: %33, KF: %16), hipotansiyon ve metabolik asidoz gelişmesi üzerine, hasta entübe edilerek, inotropik destek başlandı ve yazılı onam alınarak elektrofizyolojik çalışma (EFÇ) ve ablasyon yapılmasına karar verildi.

Elektrofizyoloji laboratuvarında, hemodinamisi bozuk olan hastaya femoral venden giriş sağlanamayınca, sağ juguler vene 5 F kılıf yerleştirildi. Dört F'lik diagnostik kateterle, EnSite NavX (St Jude Medical Inc, USA) ile üç boyutlu sağ atriyum anatomisi çıkarıldı daha sonra SVT sırasında haritalama yapıldı. PFO'dan sol tarafa geçilerek (Şekil 1) erken retrograd atriyal aktivasyonun sol posteroseptal bölgede olduğu anlaşıldı. Zorlanılmadan girilen koroner sinüsde de retrograd iletinin aynı bölgede olduğu gösterildi (Şekil 2). Taşikardi siklüs uzunluğu 250 milisaniye (msn) idi. SVT esnasında 5 French 4 mm uçlu (Marin; Medtronic) RF ablasyon kateteri ile sol posteroseptal bölgede ablasyonun 5. saniyede (sn) taşikardi durdu. Kırk yedi saniye (sn) süren ilk ablasyon sonrası SVT tekrar başladı, aynı bölgeye SVT sırasında tekrar ablasyon yapıldı ve 3. sn de atak sonlandı (Şekil 3). Kırk beş sn süre ile 45 watt ve ortalama 50 derece ile ikinci lezyon tamamlandı. Ablasyondan



Şekil 1. Ablasyon kateterinin, juguler venden ilerletilerek foramen ovale (PFO) yolu ile sol atriyuma geçilmesi