



Percutaneous Transluminal Coronary Angioplasty in a Patient with Congenital Diaphragmatic Bochdalek Hernia

Konjenital Diyafragmatik Bodalek Hernili Hastada Perkütan Koroner Anjiyoplasti

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Abstract

Herniations through the foramen of Bochdalek are very rare diaphragmatic hernias in adults. Even in infants, respiratory distress syndrome manifests as a complication of a disease, it may be asymptomatic until late in life. Although the presence of atherosclerotic process do not differ from normal, angiographic characteristics of these vessels, such as the orifice configuration, exit angulation, the route of the artery and the location of the stenotic lesions are much more different. We report an extremely rare case of percutaneous treatment of a coronary stenosis in a patient whose heart was displaced to the right side of the chest due to congenital diaphragmatic Bochdalek hernia. (*The Medical Bulletin of Haseki 2015; 53: 107-9*)

Key Words: Bochdalek hernia, angioplasty

Özet

Bodalek açıklığından çıkan diyafragmatik hernilerin erişkinlerde sıklığı azdır. Çocuklarda respiratuvar stres sendromu olarak komplike olabileceği de yaşamın son dönemlerine kadar asemptomatik seyredebilir. Atresklerotik süreç normal popülasyondan farklı seyretmese de damarların giriş şekli, ters açılanması, arterin izleyiş yönü ve darlık lezyonları gibi anjiyografik karakteristikleri biraz daha farklıdır. Biz bu olguda konjenital diyafragmatik herni yüzünden kalbi göğsün sağ tarafına doğru yer değiştiren hastada yapılan perkütan koroner işlemi anlattık. (*Haseki Tıp Bülteni 2015; 53: 107-9*)

Anahtar Sözcükler: Bodalek herni, anjiyoplasti

Case Report

A seventy-year-old male with a history of uncontrolled hypertension and dyslipidemia was admitted to our hospital with typical anginal pain at rest. At the time of admission, his blood pressure and pulse rate were 150/90 mmHg and 88 beats per minute, respectively. Physical examination showed a diminished breath sounds at auscultation. The electrocardiogram on admission revealed reduction in R wave voltage across the chest leads. Telecardiography showed sliding of the heart to the right side of the thorax and presence of bowels on the left side of the thorax (Figure 1). Initial diagnosis was acute coronary syndrome and laboratory evaluation showed normal cardiac enzymes and high troponin levels. Gastroenterology consultation was assessed and congenital diaphragmatic hernia was diagnosed after evaluation. Due to unstable cardiovascular condition of

the patient, coronary angiogram was performed. The transfemoral approach was used but the left coronary arteries could not be cannulated with a standard left Judkins 6 F catheter. The positions of the aorta and coronary ostium were changed due to the displacement of the heart as a consequence of the hernia. Coronary ostiums were more vertical and the distance and the angle between the contralateral part of the aorta and coronary ostium were different from the normal coronary anatomical positions. We could not cannulate the coronary arteries in spite of repeated attempts using different maneuvers with the Judkins catheter which had a short and bent tip. For easy back-up and good engagement to the coronary artery ostium, extra back up (EBU) diagnostic catheter was chosen. Severe lesions were seen in the proximal and mid segments of the left anterior descending artery (LAD) (Figure 2). The right and circumflex arteries were normal.

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Figure 1. Displacement of the heart to the right side of thorax and presence of bowel images on the left side of the thorax



Figure 2. Extra back-up catheter comes into contact with a line on the aortic wall and is supported by the contralateral part of the left coronary artery ostium and severe lesions in proximal and mid segments of left anterior descending coronary artery in left anterior oblique cranial view. And presence of bowel images on the lateral part of the angiographic view

Subsequently, after changing the diagnostic catheter with guiding EBU catheter, percutaneous transluminal coronary angioplasty for the stenosis in the LAD was performed. The lesions were directly stented with 3.0x25 mm and 3.0x18 mm bare metal stents, respectively (Figure 3). Following the procedure, the patient was discharged on day three with conventional double-antiplatelet treatment (aspirin and clopidogrel). At one year, the patient was still asymptomatic and in good clinical condition.



Figure 3. Left coronary angiogram in left anterior oblique position after stenting proximal and mid left anterior descending

Discussion

The goal of coronary angiography is to define the coronary anatomy and the degree of luminal obstruction of the coronary arteries. It is most commonly used to determine the presence and extent of obstructive coronary artery disease and to assess the feasibility and appropriateness of various forms of therapy, such as revascularization by percutaneous or surgical interventions. It can be considered as a feasible and safe procedure in routine daily practice. Despite improvements in coronary stent designs, difficulties in delivery may still be encountered in certain rare circumstances which affect the heart and/or coronary artery anatomical positions such as dextrocardia, hernia and coronary anomalies (1). Since there are no standardized guidelines to select a catheter for these abnormalities, the choice of diagnostic and interventional guide catheters that provide adequate access to the coronary arteries and support for stent deployment is much more complex than routine invasive procedures in such abnormalities. The anatomy of this anomaly and the operator's preferences are key factors for performing angiography successfully (2-5). The operators are occasionally faced with multiple technical challenges that require frequent catheter changes to find the best fitting catheter. For the safety and effectiveness of the procedure, and to prevent the prolonging of time, an optimal guide must be chosen to provide a stable platform for the operator to advance devices to the coronary artery through the lesion. In daily practice, the most commonly used guides are Judkins, Amplatz and EBU

guides. Each guide has different properties for different anatomical variations. Due to vertical configuration of the coronary orifice in our case, Judkins catheter was not the appropriate choice for the procedure. For this reason EBU guiding catheter was chosen. It has a longer secondary curve that is designed to rest on the opposite aortic wall for strong and stable platform. Although Bochdalek hernia is not the main subject of this case, the abnormal anatomic variation, angulation and the course of coronary arteries in these patients make invasive procedures more complex for the operator. To prevent wasting time in trying different guiding catheters and techniques, the operator must select proper equipment, and special consideration should be given during invasive procedures.

References

1. Mullins ME, Stein J, Saini SS, Mueller PR. Prevalance of incidental Bochdalek's hernia in a large adult population. *Am J Roentgenol* 2001;177:363-6.
2. Topaz O, DiSciascio G, Goudreau E, Cowley MJ, Nath A, Kohli RS, Vetrovec GW. Coronary angioplasty of anomalous coronary arteries: notes on technical aspects *Cathet Cardiovasc Diagn* 1990;21:106-11.
3. Oral D, Dağalp Z, Pamir G, Alpman A, Omürlü K, Erol C, et al. Percutaneous transluminal coronary angioplasty of anomalous coronary arteries: case reports. *Angiology* 1996;47:77-82.
4. Udaya Prashant P. Successful angioplasty of anomalous coronary arteries with total occlusions. *J Invasive Cardiol* 2012;24:228-32.
5. Pellizzón OA, Scaglione L, Chiesa AE, Gonzalez MD. Spontaneous termination of ventricular fibrillation in a patient with congenital coronary anomaly. *Congenit Heart Dis* 2012;7:109-12.