Multiple Myocardial Bridges in a Patient with Hypertrophic Cardiomyopathy

Hipertrofik Kardiyomiyopatili Bir Hastada Çoklu Miyokardiyal Kas Bandı

Çoklu Miyokardiyal Kas Bandı / Multiple Myocardial Bridges

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Özet

Miyokardiyal kas bandı nadir rastlanan konjenital bir anomalidir. Hemen her zaman sol ön inen koroner arterde görülür. Aynı hastada, farklı koroner arterlerde, birden fazla kas bandının eşzamanlı görüldüğü çok az vaka bildirilmiştir. Bu makalede , 60 yaşındaki, hipertrofik kardiyomiyopatili bir erkek hastada, sol ön inen arter ile sağ koroner arterde eşzamanlı olarak görülen miyokardiyal kas bandını sunduk. Miyokard perfüzyon sintigrafisinde iskemi saptanmamış ve hasta medikal olarak takip edilmiştir.

Anahtar Kelimeler

Miyokardiyal Kas Bandı; Hipertrofik Kardiyomiyopati; Tünel Arter

Abstract

Myocardial bridging is a rare congenital anomaly. It is almost always confined to the left anterior descending coronary artery. There are few reported cases with simultaneous occurrence of multiple bridges of different coronary arteries in the same patient. In this article we report a 60-year-old male with hypertrophic cardiomyopathy having multiple myocardial bridges left anterior descending and right coronary arteries. No ischemia was detected on myocardial perfusion single photon emission computed tomography and the patient was medically followed up.

Keywords

Myocardial Bridge; Hypertrophic Cardiomyopathy; Tunnel Artery

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Introduction

Myocardial bridging is a rare congenital anomaly which epicardial coronary artery is compressed by a muscular band. It is rarely associated with serious complications [1]. Coronary involvement other than left anterior descending artery (LAD) is very rare. Our case presents concomitant bridging of LAD and posterior descending branch of the right coronary artery in a patient with hypertrophic cardiomyopathy.

Case Report

60 year old male presented at outpatient clinic complaining of exercise induced dyspnea. He had a history of hypertension and diabetes mellitus. Physical examination did not reveal any remarkable finding. Negative precordial T waves were prominent on electrocardiogram. Transthoracic echocardiography displayed non-obstructive hypertrophic cardiomyopathy (Fig 1). Diastolic septal thickness was measured 36 millimeters.

Given the patient's findings coronary angiogram was performed. Left angiogram showed systolic complete compression of first large septal and mid LAD (Fig 2). Right angiogram showed complete occlusion of distal posterior descending artery during systole as well (Fig 3). During diastole Total recovery and decompression was observed in both coronary arteries. No ischemia was detected on myocardial perfusion SPECT (single photon emission computed tomography). Patient is still being followed up medically in our outpatient clinic on beta blocker and calcium channel blocker therapy.

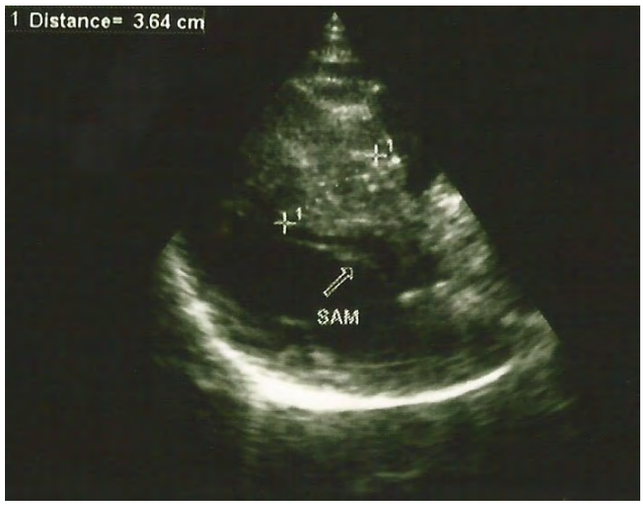


Figure 1. Transthoracic echocardiography showing non-obstructive hypertrophic cardiomyopathy and diastolic septal thickness.

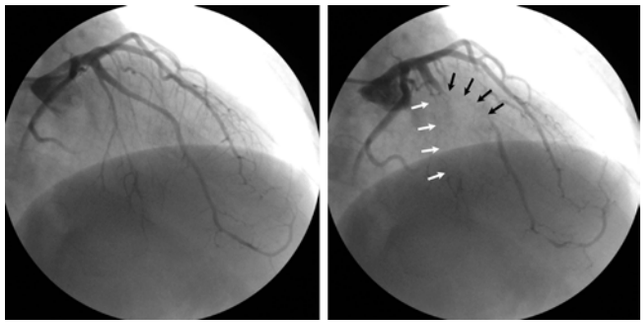


Figure 2. Left angiogram; (A) normal daistolic angiogram, (B) systolic complete occlusion of first septal branch (white arrow) and mid LAD (black arrow).

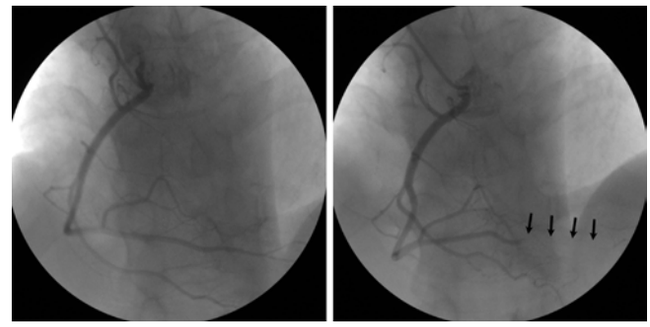


Figure 3. Right angiogram; (A) normal diastolic angiogram, (B) systolic complete occlusion of distal posterior descending artery.

Discussion

Myocardial bridging is a congenital variant of a coronary artery in which a portion of an epicardial coronary artery (most frequently the middle segment of the LAD) takes intramural course. This frequently results in vessel compression during systole. Coronary artery coursing within the myocardium is called tunnel artery and the muscle fiber overlying is called myocardial bridge. While frequently asymptomatic, this condition may be responsible for complications including, myocardial ischemia, arrhythmias, left ventricular dysfunction, acute coronary syndrome and even sudden death [1,2].

Since only the symptomatic cases were diagnosed with conventional angiography, prevalence were underestimated. However autopsy series reported higher prevalence up to %80 [1]. Widespread use of computed tomography angiography revealed precise anatomy and also pathophysiology [2]. Despite reported cases of myocardial ischemia ,infarction and sudden death, bridging is mostly accepted a benign entity. New reports raised suspicion of increased atherosclerosis proximal to the bridge [1]. LAD is the most involved segment.

Treatment options remain limited. Medications such as beta-blockers and calcium channel-blockers remain the first-line therapy. Surgical myotomy reserved for refractor cases. Stenting of the tunneled segment has also been used; however stent failure rate in approximately 50% of the cases, including stent fracture, and coronary perforations have been reported. As with surgical intervention, percutaneous coronary intervention should only be considered as a therapeutic option in patients with bridging refractory to medical therapy, with the expectation that revascularization rates will be high even with drug-eluting stents [1].

Depending on the large series including conventional angiography, computed tomography angiography and autopsy data, involvement other than LAD is very rare [2]. The most frequent site of myocardial bridge is found in the middle segment of the LAD. Mavi et al [3] reported that out of 28 patients with myocardial bridge, only 1 had myocardial bridge of the circumflex coronary artery (3.4%). Few case reports presented concomitant RCA and LAD bridging [4,5]. Angelini et al [6] reported that out of 61 patients with myocardial bridge, only 1 had an additional bridge of the posterior descending branch of the right coronary artery.

Hypertrophic cardiomyopathy is a genetic disorder and in these cases, myocardial bridging is the most frequent encountered coronary artery lesion. Although simultaneous occurrence of bridging and hypertrophic cardiomyopathy is frequently report-

ed, and the prevalence of this combination is unclear. Wu et al [7] reported concomitant posterior descending artery and LAD bridging in a patient with hypertrophic cardiomyopathy. Myocardial bridging in adults with hypertrophic cardiomyopathy is often a benign condition, and in one large cohort it was found to have no impact on overall outcome [8]. However, as hypertrophic cardiomyopathy and myocardial bridging are both the leading causes of sudden cardiac death, their combination must alert the clinician. Therefore a general principle, the need for a personalized approach to each individual should be emphasized. This case demonstrates myocardial bridges could rarely involve multiple coronaries and this multi site involvement is associated with hypertrophic cardiomyopathy.

Competing interests

The authors declare that they have no competing interests.

References

1. Loukas M, Von Kriegenbergh K, Gilkes M, Tubbs RS, Walker C, Malaiyandi D et al. Myocardial bridges: A review. Clin Anat 2011;24(6):675-83.
2. Ishikawa Y, Kawawa Y, Kohda E, Shimada K, Ishii T. Significance of the anatomical properties of a myocardial bridge in coronary heart disease. Circulation journal : official journal of the Japanese Circulation Society 2011;75(7):1559-66.
3. Mavi A, Sercelik A, Ayalp R, Karben Z, Batyraliev T, Gumusburun E. The angiographic aspects of myocardial bridges in Turkish patients who have undergone coronary angiography. Ann Acad Med Singapore 2008;37(1):49-53.
4. Kucukosmanoglu M, Akkaya E, Ardic I, Sincer I. Myocardial bridging of the left anterior descending coronary artery and right coronary artery in a patient with mitral valve stenosis. Kardiol Pol 2012;70(6):646-7.
5. Hu XY, Zhou DX, Qian JY, Zhang F, Pan CZ, Ge JB. Multiple myocardial bridges affecting left anterior descending artery and right coronary artery with hypertrophic cardiomyopathy: a case report. Chin Med J (Engl) 2007;120(8):734-6.
6. Angelini P, Trivellato M, Donis J, Leachman RD. Myocardial bridges: a review. Prog Cardiovasc Dis 1983;26(1):75-88.
7. Wu QY, Xu ZH. Surgical treatment of myocardial bridging: report of 31 cases. Chin Med J (Engl) 2007;120(19):1689-93.
8. Sorajja P, Ommen SR, Nishimura RA, Gersh BJ, Tajik AJ, Holmes DR. Myocardial bridging in adult patients with hypertrophic cardiomyopathy. Journal of the American College of Cardiology 2003;42(5):889-94.

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