Multiple Myocardial Bridges in a Patient with Hypertrophic Cardiomyopathy

Çoklu Miyokardiyal Kas Bandı

Hypertrofik Kardiyomiyopatili Bir Hastada Çoklu Miyokardiyomiyopatili

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Özet

Anahtar Kelimeler
Miyokardiyal Kas Bandı; Hipertrofik Kardiyomiyopatili; 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
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.

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**

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