

Coexistence of Ectasia and Myocardial Bridge on the Same Coronary Artery Segment

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Abstract

Coronary artery ectasia (CAE) is the dilatation of coronary artery segment just about 1.5 times than normal adjacent segment. Myocardial bridge (MB) is rare congenital anomaly of coronary arteries, characterized by systolic compression of the vessel segment. In this article, we report on a case of the coexistence of CAE and MB in the same segment of left anterior descending artery (LAD) in an 82 year old patient with acute coronary syndrome.

Keywords: Coronary artery ectasia, myocardial bridge, acute coronary syndrome

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Introduction

Coronary artery ectasia (CAE) is the dilatation of coronary artery segment just about 1.5 times than normal adjacent segment (1). CAE is an uncommon disorder diagnosed in one to 4% of patients undergoing coronary arteriography (2). There are various causes of CAE as atherosclerosis, connective tissue diseases and iatrogenic trauma (3). The most common among them is the atherosclerosis. Myocardial bridge (MB) is defined as an anomalous course of a coronary artery, in which an epicardial vessel penetrates intramyocardially, with occurring compression during systole (4). The angiographic prevalence of MB in the general population is between 0.15% and 25% (4,5). The proximal left anterior descending artery (LAD) is the main site affected by MB, occurring with a reported relative incidence of 46% of the MB cases (5,6). The length of MB can range from 10 to 50 mm (7).

Case

An 82-year-old male admitted to our emergency department with the complaint of chest pain in an unstable manner. His medical history included only hypertension. He had been treated in another hospital for non-ST-elevation myocardial infarction (NSTEMI) in the previous week but had no improvement. Physical examination when he was transported our department, his temperature was 36.8 °C; pulse rate, 82 beats/min; blood pressure, 144/81 mmHg; respiratory rate, 18 breaths/min; and oxygen saturation, 99% on room air. His jugular venous pressure was approximately 6 cm H₂O.

Cardiovascular examination had no-significant findings. Lungs were clear on auscultation bilaterally, and no peripheral edema was present. There were dynamic ST-segment and T-wave changes in his serial electrocardiogram (ECG) especially on anterolateral precordial derivations. The measured troponin level was 0,265ng/ml. The other biochemical parameters were unremarkable except mild anemia and mild thrombocytopenia. Systolic function of the left ventricle was found to be normal in two-dimensional echocardiography. Patient was taken emergently to the coronary angiography laboratory. Coronary angiography was performed and three-vessel disease was detected. Additionally, LAD was found to be ectatic especially in the middle segment (Figure A-B). Also a severe MB (causing a stenosis of 90 % during systole) was noticed in the same region.

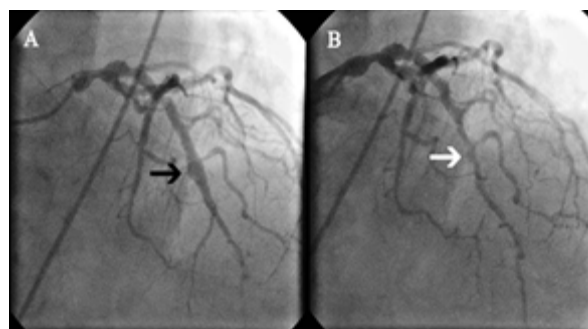


Figure 1. A. Selective left coronary angiogram demonstrating ectasia of the middle segment of the LAD in diastolic phase; B. The left coronary angiogram shows lesions of 80%-90% systolic narrowing at the middle of LAD, and ectasia is not seen. There is a hint of LAD systolic compression.



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Discussion

CAE have been defined as a dilatation in a coronary artery segment to more than 1.5 times the diameter of adjacent normal coronary segments (2). Markis and colleagues (8) designed a classification system in a study of 30 patients with coronary artery ectasia; diffuse ectasia of 2 or 3 vessels was classified as type I, diffuse disease of 1 vessel and localized disease in another vessel as type II, diffuse ectasia of 1 vessel only as type III, and localized or segmental ectasia as type IV. The reasons of CAE are multifactorial: approximately 50% of CAE are thought to be caused by atherosclerosis; other risk factors are congenital causes, inflammatory or connective-tissue disorders (9). Postmortem histologic assessment of these patients with CAE showed underlying changes that were similar to those in patients with atherosclerotic lesions diffuse hyalinization, together with intimal and medial damage which supported an overlapping pathophysiologic mechanism (10,11).

Myocardial bridge (MB) occurs when a band of myocardial fibers overlies a segment of the coronary artery, which results in mechanical stenosis secondary to systolic compression. It is described by the following functional signs; systolic compression of the bridge segment of the coronary artery; accelerated flow velocity at early diastole (finger-

tip phenomenon); no or reduced systolic antegrade flow; decreased diastolic/systolic velocity ratio (5). Polacek and Kralove (12) found that the relative frequency of MB involving the LAD was 70%, the circumflex artery 40%, and the right coronary artery 36%. Macroscopic observations on a total of 1056 hearts showed that 23% of MB involved the left anterior descending artery and only 5.7% involved the right coronary artery (13).

Conclusion

In this manuscript, coexistence of myocardial bridge and coronary artery ectasia in the same segment of left anterior descending artery is presented. We considered the atherosclerotic process added on the congenital muscular bridge led to the formation of ectatic muscular bridge in this patient, because, our patient did not have the other possible causes CAE. In the angiography, significant difference in the diameter of LAD during systole and diastole drew our attention, so we called LAD as ambivalent. This association between CAE and MB is a phenomenon that warrants further study to determine its incidence and possible causes. According to the best of our knowledge, coexistence of muscular bridge and ectasia in the same segment has not been reported previously.

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