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Case Report

Internal Medicine Section

A Rare Case of Type IV Dual Left Anterior Descending Coronary Artery

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ABSTRACT

Coronary artery anomalies are usually asymptomatic and associated with other cardiac malformations. Dual left anterior descending coronary artery (LAD) is an uncommon congenital anomaly with four subtypes. This anomaly has been described in the angiographic literature and dual LAD types depending on the origin of major septal and diagonal branches and course within the anterior interventricular sulcus. Type IV expresses the anomaly of a rudimentary LAD artery ending in the mid-portion of the anterior interventricular sulcus, and the presence of other LAD originating from the right coronary artery and continuing to the anterior interventricular sulcus. We report the rare case of a patient with the type IV dual left anterior descending coronary artery.

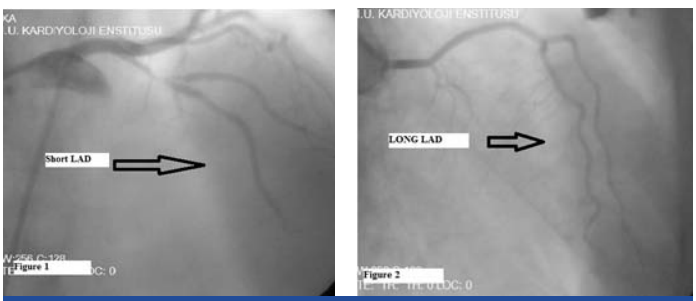
Keywords: Coronary angiography, Coronary vessel anomalies

CASE REPORT

A 78-year-old man with a ten-year history of hypertension was admitted to our hospital because of 3 hours chest pain at rest. The physical examination was normal. His arterial blood pressure was 149/80 mm hg. On surface ECG the rhythm was in sinus rhythm and anterior ischemic ST changes were present. On transthoracic echocardiography; anteroseptal mid, anterior mid apical walls were hypokinetic and EF: 42%. Cardiac biomarkers were detected high and there was no abnormality in other standard biochemical tests. With these results patient was diagnosed Non ST elevation myocardial infarction. Low molecular weight heparin, acetylsalicylic acid and clopidogrel therapy was started immediately. Coronary angiography revealed a coronary artery anomaly of type IV dual LAD with a short LAD, which originated from the LMCA and terminated in the mid-portion of the AIVS. The long LAD originated from the right sinus valsalva, entered into the distal part of the AIVS and travelled towards the apex of the heart, also LAD mid % 90 and D1 proximal % 95 stenosis were detected [Table/Fig-1&2]. Percutaneus coronary intervention was performed to mid segment of the LAD the patient was discharged 5 days after coronary stenting in good health status without any cardiac adverse event. Currently, patient is on follow up, without any problems.

DISCUSSION

Coronary artery anomalies are seen in angiographic series about 0.3-0.8% [1]. Most coronary artery anomalies are a result of coincidence during angiography [2,3]. Dual LAD anomaly is usually described by a short LAD that ends high in the anterior interventricula groove and a long LAD that has a proximal course outside the anterior interventricular groove and returns to the groove in its distal course.



[Table/Fig-1]: The short LAD originating from the LMCA terminated in the middle part of the AIVS. LMCA: left main coronary artery. **[Table/Fig-2]:** The long LAD originating from the right sinus valsalva and entered the distal part of the AIVS.

Four subtypes have been described. In types I and II, along LAD originates as a branch from the LAD proper, takes a course parallel to the short LAD in its proximal course on either the left ventricle (type I) or the right ventricle (type II), and re-enters the anterior interventricular groove. Rather than having a parallel diagonal branch, along LAD reenters the anterior interventricular groove in the distal aspect. Type III dual LAD is extremely rare, occurring in only one of the 23 cases of dual LAD in the angiographic series described by Spindola-Franco et al., Type III dual LAD is characterized by a proximal intramyocardial course of the long LAD. Type IV dual LAD is a very rare type in which the long LAD arises from the right coronary artery, takes an anomalous course, and inserts the anterior interventricular groove [4,5].

Coronary artery anomalies are usually not detectable symptoms. But, when atherosclerotic CAD is present, it is difficult to differentiate major stenosis or occlusion of this anomaly can precipitate CAD has not been established. In patients with suspected acute coronary syndrome superimposed by coronary artery anomalies, a mismatch may occur between the results of noninvasive studies of the involved vessel and those of coronary angiography [6,7].

The course and origin of coronary arteries are very important in these anomalies. Extrinsic compression between the aorta ascendens and pulmonary artery, especially exercise, produce angina, myocardial infarction, syncope or sudden cardiac death in these patients [6-13]. When this happen, surgical treatment is necessary. Coronary artery anomalies are best detected by coronary angiography. MSCT has a role to show relationship between great arteries [14].

CONCLUSION

The LAD is an important coronary artery and being aware of the congenital anomalies of the LAD helps the physicians make the correct diagnosis and treatment in patients undergoing percutaneous coronary intervention. We treated a patient with type IV dual LAD. Being alert to this coronary artery anomaly will facilitate clinicians to diagnose and manage patients properly.

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