Successful Primary PCI in a Patient with Acute Myocardial Infarction and Cardiogenic Shock with Super-dominant Right Coronary Artery and Absent Left Circumflex Artery

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Authors’ contributions

This work was carried out in collaboration among all authors. Author GS designed the manuscript, provided the clinical findings, the laboratory findings, images for the study and wrote the first draft of the study. Authors MB, AJ and AG managed the literature searches. Author NOB revised the manuscript. All authors read and approved the final manuscript.

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ABSTRACT

Super-dominant right coronary artery and the absent left circumflex artery is a rare congenital coronary anomaly, with only a few cases reported in the literature. Left anterior descending artery arises directly from the left anterior coronary cusp. Rare coronary anomalies are sometimes encountered during primary percutaneous interventions, which may lead to changes in the course of action. We report a case of a 38-year-old patient admitted with acute anterior wall myocardial infarction and cardiogenic shock. Coronary angiography revealed super-dominant right coronary artery and absent left circumflex artery. There was thrombotic occlusion of the proximal left anterior descending artery. The patient underwent successful primary percutaneous intervention of the left anterior descending artery with a good result, was discharged after 5 days. Our case also shows the importance of taking coronary angiogram of the contralateral artery first, before taking the shoot of the infarct-related artery.

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2. CASE PRESENTATION

38 Year old male, smoker, admitted with acute onset of chest pain since 3 hours and breathlessness at rest for 1 hour. On examination, pulse was 108/min, blood pressure was 100/60 mmHg on inotropes. Bilateral basal crepitations were present on respiratory system examination, arterial blood gas showed hypoxia. Routine blood investigations were normal. Electrocardiogram showed acute anterior wall myocardial infarction. Echocardiography showed hypokinetic basal, mid and distal anteroseptal, anterior and anterolateral segments with an ejection fraction of 25%. Options were explained to the relatives. Taken for coronary angiography/primary PCI. Right, femoral vein/artery and left femoral artery access obtained with intra-aortic balloon pump standby (non-availability of Impella device). Right coronary angiogram showed super-dominant RCA with large posterior left ventricular branch reaching up to the left lateral surface of the heart (Fig. 1A, 1B). Left coronary angiogram showed thrombotic occlusion of the left coronary artery in the proximal segment (Fig. 2). No other artery was arising from the left anterior coronary cusp on the cuspal shoot. The lesion in left coronary artery was crossed with routine PCI wire followed by thrombosuction. The lesion was stented with 3x40 mm drug-eluting stent. Check shoot showed a good result with TIMI III flow (Fig. 3). Multiple diagonal arteries were arising from LAD, but there was no artery arising at the place of LCX. As the patient was in cardiogenic shock, multiple shoots were not taken. The patient was shifted to the intensive care unit for monitoring. Vitals stabilized, inotropes were tapered over the next 2 days. The patient was discharged after 5 days. Ejection fraction improved to 50% at 6 weeks. The patient is asymptomatic on subsequent follow-ups.

3. DISCUSSION

The congenital absence of the LCX is an extremely rare congenital coronary anomaly. It results from the failure of the development of LCX in the left atriocentric groove. However, some authors believe that this condition is not a true congenital anomaly of the absent artery, it is defined as the anomalous origin of the LCX from distal RCA [5,6]. It is an incidental benign finding on coronary angiography done for other reasons, as in our patient. The patient usually presents with exertional chest pain or acute coronary syndrome due to a significant lesion in RCA [7]. In one case, Mievis et al. reported myocardial infarction in a 31-year-old male patient with no significant coronary artery disease and absent LCX [8]. Some patients present with exertional chest pain even in the absence of significant stenosis in the RCA [9]. This type of exertional symptoms is due to the steal phenomenon, which results from increased metabolic demands in the LCX territory that increases arterial supply to the LCX territory and results in transient ischemia of other coronary arterial territories [10,11].

Keywords: Coronary anomalies; absent left circumflex artery; super-dominant right coronary artery.
No specific treatment is required in a patient with incidentally detected, either on invasive angiogram or CT angiography, absent LCX with normal other coronaries. It is very important to differentiate a 100% occluded LCX from absent LCX. It is also very important to identify this anomaly in patients undergoing coronary bypass surgery to ensure complete reperfusion of the myocardium and to avoid iatrogenic injury. Kadiyala M et al. has reported a similar case, but in that patient, there was significant stenosis in LAD. In our patient LAD was occluded in the proximal segment with thrombus [12].
CONCLUSION

The congenital absence of LCX is a very rare congenital coronary anomaly. It is a benign condition unless it is superimposed by atherosclerotic coronary artery disease. Absent LCX should be considered in the differential diagnosis in selected cases, to ensure satisfactory decision making in a patient. It should be differentiated from ostial total...
occlusion of LCX. To ensure complete revascularization, it is very important to identify this anomaly.

CONSENT

Written informed consent was obtained from the patient for publication of this report and any accompanying images.

ETHICAL APPROVAL

As per international standard, ethical approval has been collected and preserved by the author.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES


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