Intercoronary Continuity: A Case Report

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Abstract

Keywords

- coronary artery disease
- coronary intervention
- myocardial infarction
- stent
- atherosclerosis
- acute coronary syndrome
- risk factors

Intercoronary continuity is a rare variance of coronary circulation. The importance of this rare anomaly is unknown. We present this rare anomaly in a patient with acute myocardial infarction.

Intercoronary continuity (ICC) is a rare variance of coronary circulation and describes a large anastomotic connection between coronary arteries with or without coronary narrowing. In this case report, we present this rare anomaly in a patient with acute myocardial infarction.

Case Report

A 62-year-old woman with history of hyperlipidemia who was discharged from the hospital 2 weeks ago after being treated for an acute anterior wall myocardial infarction was hospitalized for coronary angiogram. The physical examination was normal except for a grade 2 over 6 systolic ejection murmur heard over apex radiating to axilla. The electrocardiography showed QS waves and inverted T waves in leads V1 through V4. The echocardiography disclosed moderately impaired left ventricular systolic function, moderate mitral insufficiency, akinesia of the apex, and severe hypokinesia of the anterior wall. Coronary angiogram revealed significant stenosis in the proximal left anterior descending artery (LAD) and the proximal right coronary artery (RCA) along with nearly normal left circumflex artery (CX). During the selective injection of the RCA, almost whole CX was visualized retro-

gradely from the RCA (►Fig. 1). Likewise, the injection of the left coronary artery was filling nearly entire RCA (►Fig. 2). The vessel that connected the RCA and CX was single, straight, and 2 mm in a diameter. During the same session, the stenosis in the LAD was treated with two bare metal stents. Patient was put on clopidogrel, aspirin, metoprolol, ramipril, furosemide, statin, and discharged on fourth day of admission in good condition. After 2 months, the myocardial perfusion scintigraphy showed necrosis in the apex, anterior, and anteroseptal walls without any ischemia in any of the walls (►Fig. 3).

Discussion

The intercoronary connections between coronary arteries have been classified as a collateral circulation or ICC. In contrast to collaterals, the ICC is a single straight, larger epicardial vessel (usually over 1 mm) with similar in structure to normal coronary arteries.¹ Although the true incidence is unknown, Gavrielatos et al reported only two cases among 20,880 angiographies in 9 years.² It commonly occurs in the presence of coronary narrowing and after bypass surgery.³ The persistence of a fetal pattern of coronary circulation is the

Fig. 1 The selective injection of the right coronary artery showing the vessel connecting the right coronary and circumflex arteries in the apical view. Arrow: the severe stenosis in the proximal part of the right coronary artery.

Fig. 2 The selective injection of the left main coronary artery showing the vessel connecting the right coronary and circumflex arteries in the apical view.

Fig. 3 The myocardial perfusion scintigraphy showing fixed perfusion defect in the anterior and apical wall and lack of ischemia in the inferior wall.

most possible explanation. The continuity is found in either between anterior and posterior descending arteries or more commonly between the CX and the RCA (as in this patient).¹⁻³ The direction of flow can be bidirectional (as in this case) or unidirectional.

The importance of ICC is not fully understood due to very low incidence. However, this large anastomotic connection might have a potential role in protecting the myocardium in the presence of significant stenosis in either of the parent arteries.^{3,4} To support this hypothesis, our case had totally occluded LAD and severe stenosis in the proximal RCA, but she was hemodynamically stable and could survive. Moreover, despite the significant stenosis in the proximal RCA, inferior ischemia was not detected during the myocardial perfusion. However, it has been speculated that this anomaly itself might induce ischemia by coronary steal phenomenon.⁵

In conclusion, ICC is a very rare form of intercoronary connections. Its prevalence and clinical significance need to be further investigated.

Conflict of Interest

None

References

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