Cardiology in the Young

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Congenital coronary collateral

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Abstract

Intercoronary communications are a very rare congenital coronary artery anomalies. We report a case of a man who underwent elective coronary angiography that showed a bidirectional direct intercoronary communication between right coronary and left circumflex arteries.

Images in Congenital Cardiac Disease

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Case report

A 72-year-old man presented atypical chest pain for 6 months and exercise electrocardiogram positive for ischemia with ST segment depression in leads V4–V6 at peak effort. Past medical history was significant for arterial hypertension, dyslipidaemia, and chronic obstructive pulmonary disease.

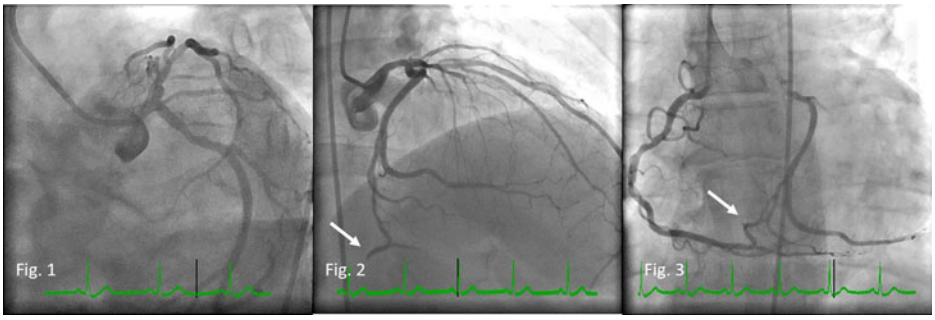
He was referred for elective coronary angiography, which revealed no significant luminal narrowing (Figs 1 and 2). However, selective injection into the right coronary artery showed retrograde filling of the distal and mid portions of the left circumflex artery from the distal portion of the right coronary artery (Fig 3). Bidirectional end-to-end anastomosis in absence of acquired coronary occlusion was possibly a primary congenital defect.

Congenital deviations of the coronary anatomy are classified as variants of normality or coronary artery anomalies. Coronary artery variants are an alternative to the normal pattern, and are relatively frequent, though coronary circulation abnormalities are uncommon, being observed in less than 1% of the population.[1] Coronary artery variants and abnormalities can be divided into four major groups: abnormalities of origin, course, and termination, and intrinsic abnormalities.[2]

Primary congenital communications between neighbouring coronary arteries are very rare. They are defined as an open-ended circulation with uni- or bidirectional blood flow between two or more coronary arteries. Two types have been described: in the distal interventricular groove between left anterior descending artery and posterior descending artery or in the posterior atrioventricular groove between left circumflex artery and right coronary artery as shown in this case.

This coronary circulation abnormality is presumed to be congenital, resulting from the persistence of the embryologic pattern of the primitive endothelial islands of coronary circulation, from a communication between the left anterior embryonic plexus and the right posterior embryonic plexus.[3] As a result, it has been suggested that an imperfect embryonic development allows the large coronary canal to persist. However, there have been reports that the development of intercoronary communication, in the absence of obstructive coronary artery disease, may occur as a result of repetitive coronary spasms.[4]

The pathophysiological significance of intercoronary communications is still not understood, with a possible protective role in case of any significant coronary artery obstruction or, in turn, leading to myocardial ischemia due to a coronary steal phenomenon.[1,4]



Figures 1, 2 and 3. Coronary angiography showing the communication between the right coronary and the left circumflex arteries.

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