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# Large anterolateral ST-elevation myocardial infarction in a patient with an isolated type R-I single coronary artery: a case report

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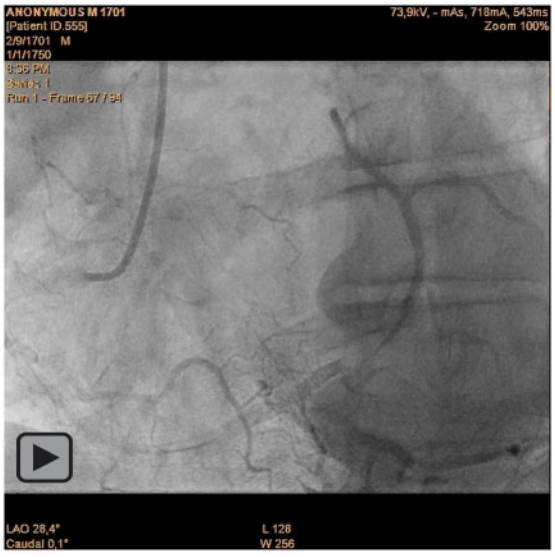
A 48-year-old male presented with an anterolateral ST-elevation myocardial infarction (STEMI) (Supplementary material online, *Figure S1*). The patient had no medical history, but his risk factors included smoking and a family history of cardiovascular disease. Upon presentation, the patient was in Killip Class I and haemodynamically stable. Emergency coronary angiography revealed an isolated 'superdominant' single coronary artery (SCA) originating from the right sinus of Valsalva, continuing distally as the circumflex artery (RCX) and thereafter as the left anterior descending artery (LAD) (*Figure 1*; *Video 1*). Aortic root angiography confirmed the absence of a left coronary artery ostium (Supplementary material online, *Figure S2*). The culprit lesion was in the posterolateral branch proximal to




**video 1** Coronary angiogram showing a single coronary artery originating from the right coronary artery ostium with a culprit lesion in the posterolateral branch proximal to the circumflex artery.

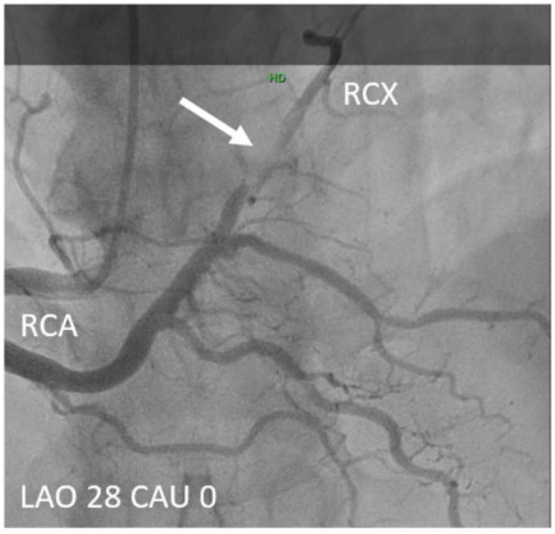



**Figure 1** Coronary angiogram showing a single coronary artery originating from the right coronary artery ostium with a culprit lesion (arrow) in the posterolateral branch proximal to the circumflex artery. RCA, right coronary artery; RCX: ramus circumflexus.

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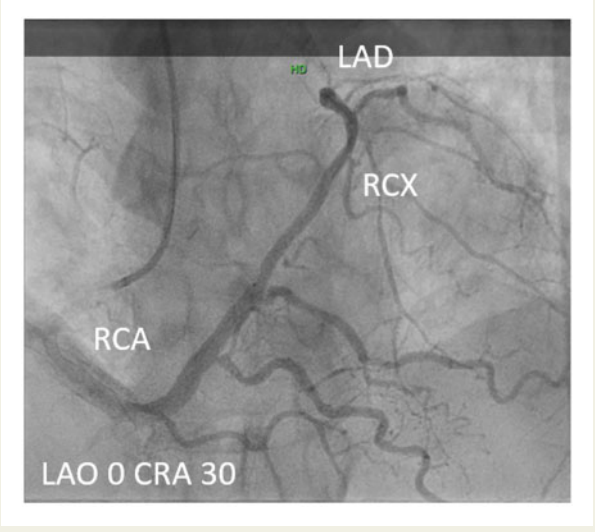


**Figure 2** Coronary angiogram after percutaneous coronary intervention. LAD, left anterior descending artery; RCA, right coronary artery; RCX, ramus circumflexus.

the RCX and LAD, which could be considered equivalent to a left main stem stenosis implying a large myocardial area at risk (*Figure 1*; *Video 1*). Subsequently, percutaneous coronary intervention with the placement of one 3.0 mm × 22 mm drug-eluting stent was successfully performed (*Figure 2*; Supplementary material online, *Figure S3*). Maximal creatinine kinase was 6990 U/L and c-troponin T level >10 000 ng/mL, confirming a large myocardial infarction. Transthoracic echocardiography revealed akinesia of the anterior, anteroseptal, apical, and lateral walls, and mild to moderate left ventricular dysfunction (ejection fraction 43%). The in-hospital course was uneventful, and the patient was discharged after 3 days.

The presence of an isolated SCA is a very rare congenital anomaly, which is often asymptomatic and incidentally discovered during coronary angiography, with an incidence ranging from 0.024 to 0.066%.[1–3] However, SCA may lead to a fatal outcome, particularly in the presence of atherosclerotic disease or a malignant course between the great vessels. In the case of known atherosclerotic disease in an SCA, primary prevention is of utmost importance because the area at risk may be large in the unfortunate case of proximal occlusion of the SCA. Our case is the first report on a STEMI in an isolated SCA type R-I, which is the rarest subtype SCA with an incidence of only 0.0008%.[1]

## Supplementary material

Supplementary material is available at *European Heart Journal - Case Reports* online.

**Consent:** The authors confirm that written consent for submission and publication of this case report including images and associated text has been obtained from the patient in line with COPE guidance.

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