

Acute coronary syndrome with a culprit lesion in a single coronary artery

Anna B. Witkowska¹, Jarosław D. Skowroński¹, Sławomir Jasek²,
Hubert Łazarczyk³, Mirosław Janowski⁴, Adam Witkowski¹

¹ Department of Interventional Cardiology and Angiology, Institute of Cardiology, Warsaw, Poland

² 2nd Department of Coronary Artery Disease, Institute of Cardiology, Warsaw, Poland

³ Department of Information Technology, Institute of Cardiology, Warsaw, Poland

⁴ Institute for Cell Engineering, Johns Hopkins University School of Medicine, Baltimore, United States

The absence of a coronary artery is an extremely rare finding (incidence <0.01%). Until 2012, only 32 cases of an absent left circumflex coronary artery (LCx) were reported, with an incidence of around 0.003%.¹ The exact incidence of a congenital single coronary artery (SCA) with an absent right coronary artery (RCA) is unknown, with only several such anomalies having been described. Most of those cases were reported as incidental angiographic findings, and a Dutch angiographic series of 15 cases is probably the largest SCA cohort so far.² Acute coronary syndrome (ACS) with a culprit lesion in the SCA seems to be extremely rare and, to our best knowledge, has not been reported so far.

A 40-year-old woman with metabolic syndrome underwent primary percutaneous coronary intervention for ST-segment elevation myocardial infarction of the anterior wall. The left anterior descending coronary artery (LAD) was opened,

followed by a successful implantation of a drug-eluting stent and final Thrombolysis in Myocardial Infarction grade 3 flow (FIGURE 1A and 1B). A coronary angiogram showed the LCx giving off a significant branch that continued in the atrioventricular groove. Moreover, an aortic root angiogram excluded the presence of an RCA ostium (FIGURE 1C). A year later, the patient was admitted for a control computed tomography angiography (CTA), which confirmed patent LAD and LCx (FIGURE 1D and 1E), and an absent RCA (FIGURE 1F).

To our knowledge, as few as 2 cases of an SCA in ACS have been reported so far. However, those patients revealed nonsignificant lesions in the coronary arteries.³ Observations from a Dutch cohort confirmed that SCAs were not free from atherosclerotic lesions, although no cases of ACS had been described.² The novelty of our report is that the culprit artery responsible for ACS may be within the SCA. The emerging role of CTA may

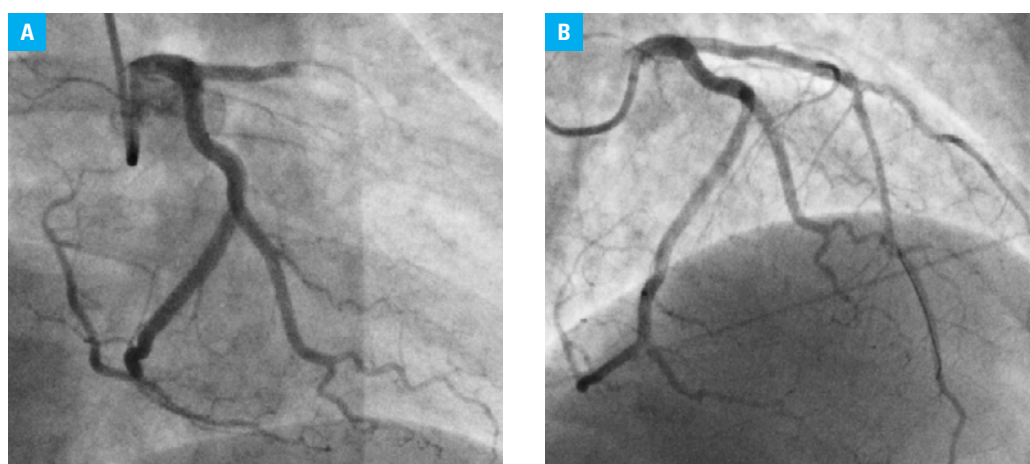


FIGURE 1 Angiographic images showing an acute closure in the proximal segment of the left anterior descending coronary artery (LAD; **A**), and the culprit artery after opening and implantation of a drug-eluting stent (**B**)

Correspondence to:

Jarosław D. Skowroński, MD,
Klinika Kardiologii i Angiologii
Intwencyjnej, Instytut Kardiologii,
Warszawa, Poland,
phone: +48 22 343 42 72,
e-mail: jskowronski@ikard.pl

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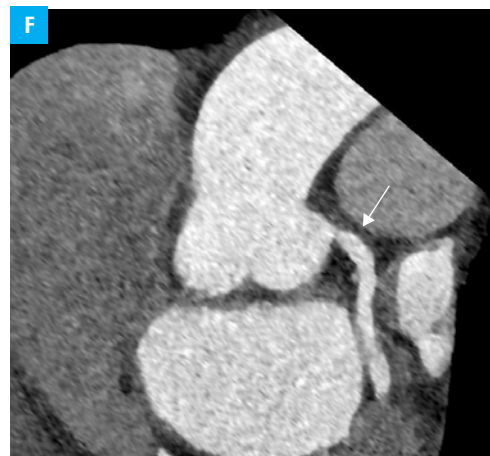
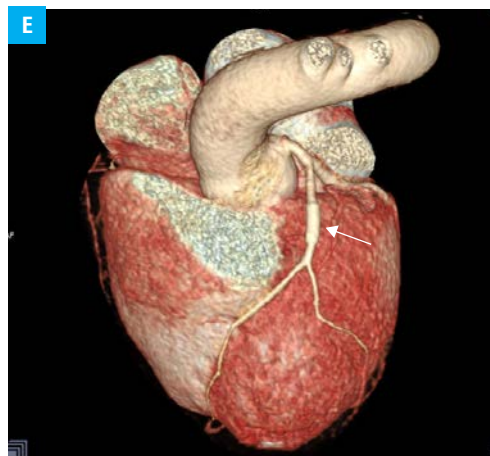
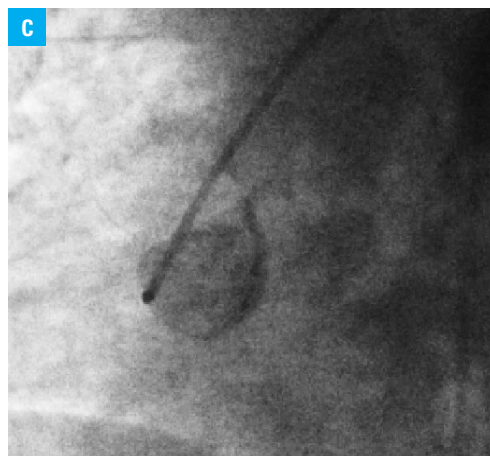
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FIGURE 1 **C** – an aortic root angiogram without evidence of the right coronary artery (RCA) ostium; **D** – computed tomography angiographic image showing an absent RCA and a large branch from the left circumflex coronary artery, which continues in the atrioventricular groove (the arrow indicates a previously implanted stent); **E** – a 3-dimensional volume-rendered reconstruction with the focus on the LAD (arrow); **F** – an axial reformatted image showing the origin of the LAD (arrow) and confirming the absence of the RCA



facilitate such discoveries. However, there have been no reports of using coronary angiography and CTA for SCA imaging.

The Lipton classification of the SCA includes 9 patterns according to the origin, anatomical course, and termination of the anomalous artery. The compensatory continuation of the LCx in the typical territory of an absent LCx was clearly visible in our patient. Still, an absent RCA should be considered different from an RCA arising from the left SCA. Kang et al⁴ were most probably the first to report a case of an absent RCA and LCx along the entire right side of the heart. Moreover, Gupta et al⁵ were the first to describe an SCA with an absent RCA not associated with any anomaly.

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