

Acute coronary syndrome and single coronary artery ostium

Ostry zespół wieńcowy i wspólne ujście tętnic wieńcowych

Uwe Speiser*, Georg Ende*, Silvio Quick, Nadine K. Waessnig, Stephan Wiedemann, Ivan Platzek, Ruth H. Strasser, Michael Guenther

University of Technology, Heart Centre, University Hospital, Dresden, Germany

*First two authors contributed equally.

We report the case of a 44-year-old man with a medical history of arterial hypertension and nicotine abuse (10 pack years) presenting with persistent chest pain to our emergency department. Cardiac markers were elevated (hsTrop T 112 ng/L; CK 4.33 μ kat/L; CK-MB 0.67 μ kat/L) and electrocardiogram impressed with biphasic T waves in lead V₁ to V₄ (Fig. 1). Two-dimensional Doppler echocardiography showed normal biventricular function without regional wall motion disturbances. Left heart catheterisation revealed a single coronary artery from the left sinus valsalva with a right coronary artery (RCA) arising from the left main stem (LMS). Furthermore, a high grade stenosis of proximal left anterior descending (LAD) was displayed and percutaneous coronary intervention with implantation of 2 drug eluting stents was successfully performed (Figs. 2, 3). To document the extent of myocardial infarction, and to exclude a malignant course of RCA between aorta and pulmonary artery, the patient was referred to 3T cardiac magnetic resonance (MR) with an 8-channel cardiac coil. Late gadolinium enhancement (LGE) sequences presented small septal subendocardial contrast enhancement indicating myocardial fibrosis after myocardial infarction (Fig. 4). Using a 3D whole heart Fat Sat FIESTA technique sequence, RCA arising from the LMS was confirmed. But because of the 3T MR-specific low spatial resolution, RCA course could not be traced accurately (Fig. 5). Therefore, a coronary 128-slice dual-source computed tomography (CT) was carried out showing RCA running between aorta, left and right atrium and not interarterially (Figs. 6–8). Further conservative course of the patient proceeded without complications. This case demonstrates an isolated single coronary artery as a rare congenital anomaly occurring with an incidence of 0.02%. Although often being asymptomatic, this anomaly can also appear with a sudden cardiac event, as in this patient, or with a malignant course. Therefore, the necessity for multimodal imaging to illustrate the true anatomic conditions should be underlined. Additionally, the still existing difficulties of 3T MR coronary angiography in daily practice and the resolution advantages of CT in imaging coronary arteries were highlighted.



Figure 1. 12-channel electrocardiogram showing biphasic T-waves in lead V₁-V₄

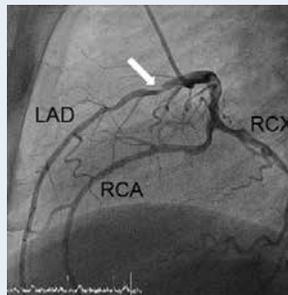


Figure 2. Left anterior oblique view cranial angulation of coronary artery showing RCA, ramus circumflexus (RCX) and LAD with a proximal stenosis (arrow) all arising from the LMS

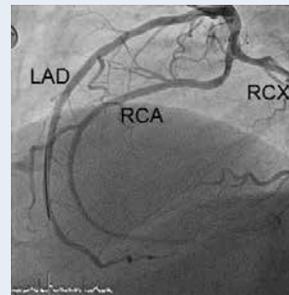


Figure 3. Left anterior oblique view cranial angulation after percutaneous intervention and drug eluting stent implantation at proximal LAD



Figure 4. Cardiac MR imaging, LGE sequence in short axis view with small septal subendocardial contrast enhancement (arrow)



Figure 5. Cardiac MR, 3D whole heart sequence, suspected course of RCA (arrow) between aorta (Ao), left (LA) and right (RA) atrium

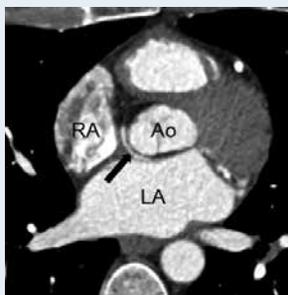


Figure 6. Coronary CT confirming RCA course between aorta and left atrium (arrow)



Figure 7. 3D reconstruction of coronary CT with RCA (left arrow) and LAD after stent implantation (right arrow)

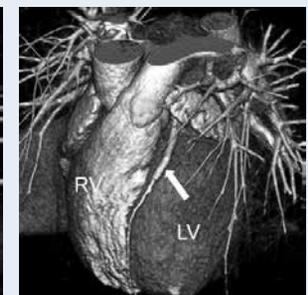


Figure 8. 3D reconstruction of coronary CT with LV, RV and LAD after stent implantation (arrow)

Address for correspondence:

Dr Uwe Speiser, Technische Universität Dresden, Herzzentrum, Universitätsklinik, Fetscherstr. 76, 01307 Dresden, Germany, e-mail: uwe.speiser@mailbox.tu-dresden.de

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