STUDIUM PRZYPADKU / *CLINICAL VIGNETTE*

Intra-atrial course of the right coronary artery: an uncommon anomaly diagnosed by coronary computed tomography angiography

Wewnątrzprzedsionkowy przebieg tętnicy wieńcowej prawej: rzadko spotykana anomalia rozpoznana w angiografii wieńcowej metodą tomografii komputerowej

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Intra-atrial course of the right coronary artery (RCA) is a very rare anomaly. The frequency of anomalous course of RCA through the right atrium in the population is approximately 0.1%. Intracavitary course of RCA was first described by McAlpine in 1975 [McAlpine WA ed. Heart and coronary arteries. An anatomical atlas for clinical diagnosis, radiological investigation, and surgical treatment. Springer-Verlag, New York 1975]. The growing clinical use of cardiac computed tomography (CT) is enabling accurate assessment of the morphology and location of anomalous vessel course. We present the case of a 78-year-old female who was referred to cardiac CT to rule out ischaemic heart disease. The patient came to the cardiology outpatient clinic with non-specific chest pain, low tolerance of physical effort, dry cough, and raised blood pressure (BP) to 200/100 mm Hg. In anamnesis: hypertension for 6 years, and an acute coronary syndrome 2 years ago without hospitalisation but with pharmacological treatment. In physical examination: regular heart rate (HR) of 68/min with normal heart sounds and normal breath sounds over the lungs, BP 140/80 mm Hg. In resting electrocardiogram: regular HR of 68/min and left branch bundle block. In echocardiography: global hypokinesis with ejection fraction of about 45%. On account of her age and the non-specific cardiac trouble, a cardiac CT was recommended. The origin and proximal segment of the RCA was normal with an epicardial course in the right atrioventricular groove. RCA passed through the anterior right atrial wall (Fig. 1). The mid-segment of RCA had 2 cm of intra-atrial course. The distal segment of RCA exited from the right atrium. This divided into a posterolateral ventricular branch and a posterior descending artery which runs to the heart apex in the posterior interventricular groove. Previously published case reports of intra-atrial RCA evaluated by CT angiography have shown variable lengths of 1.5 to 5.5 cm, which run inside the cavity of the right atrium (Fig. 2). The left main coronary artery, including the left anterior descending and the left circumflex, had normal origin and epicardial course. The above arteries were unobstructed, with numerous soft and mixed plaques causing less than 50% stenosis. The patient was given a dose of 90 mL iodinated contrast medium 400 mg/mL, followed by saline solution. HR during examination was 54–56/min. Multi-detector CT (MDCT) provides a high-quality, noninvasive technique which can help diagnose and visualise the origin and course of anomalous coronary arteries by a 3D display of anatomy. Recognition of such anomalies may help prevent unsafe consequences during interventional procedures or bypass surgery. Anomalous intracavitary RCA may be damaged during procedures including inferior vena cava cannulation, right heart catheterisation, coronary sinus cannulation, pacemaker implantation, invasive electrophysiology testing, ablation of atrial dysrrhythmias arising in the right atrium, transseptal puncture for left atrial access and coronary artery bypass surgery. Therefore, identifying this anomalous course provides significant information to the interventional cardiologist or cardiothoracic surgeon. The detection of these abnormalities is improving with the growing use of cardiac CT. MDCT angiography enabled better and noninvasive visualisation of the anomalous course of coronary artery and associated findings. CT is the diagnostic method for detecting coronary anomalies associated with a low risk of complications. The course of an anomalous coronary artery can be identified with very high accuracy.
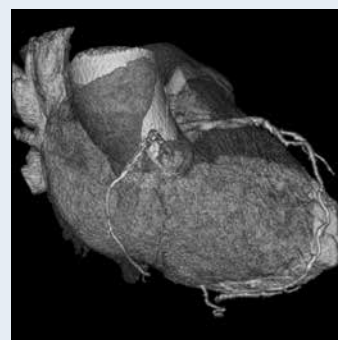

Figure 1. Volume-rendered image shows the entry and exit of the RCA through the right atrial wall and normal epicardial course of the proximal and distal RCA
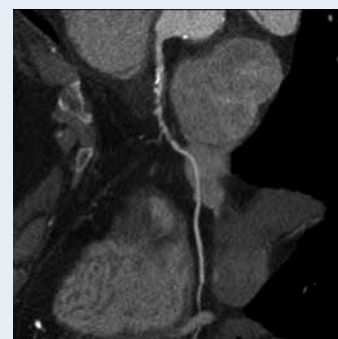

Figure 2. Coronary computed tomography angiography shows the intra-atrial location of the RCA

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Conflict of interest: *none declared*