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Vieussens' arterial ring: A blessing and a curse

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A 43-year-old premenopausal female patient was admitted to the cardiology department with typical clinical presentation of non-ST-segment elevation acute myocardial infarction (MI), without overt electrocardiographic signs of ischemia or regional wall motion abnormalities. Coronary angiography (CAG) revealed non-obstructive coronary arteries with the presence of tortuous and prominent conus artery (Fig. 1A), with a small collateral reaching left coronary artery (LCA). Also, the selective CAG of LCA revealed two small collaterals stemming from proximal part of left anterior descending artery (LAD) forming a closed arterial ring (Fig. 1B). Computed tomography angiography revealed presence Vieussens' arterial ring with connection between conus artery and LAD (Fig. 1C–E). Subsequent cardiac magnetic resonance showed MI scar reflected by transmural late gadolinium enhancement in mid inferolateral segment of the left ventricle (Fig. 1F, T1-sequence). Given the diagnosis of MI, dual antiplatelet therapy and transient treatment of low-molecular weight heparin was instituted leading to an uneventful in-hospital stay. Outpatient myocardial dipyridamole-stress dynamic single photon emission tomography excluded ischemia within any left ventricular segment, while the patient complained of chronic angina of Canadian Cardiovascular Society grade 2. Vieussens' arterial ring is a rare congenital anomaly of coronary arteries, which was previously associated with collateral circulation in the event of occlusion or agenesis of LCA. This case indicates the association between presence of Vieussens' arterial ring and MI with non-obstructive coronary arteries. The underlying mechanism remains unknown but myocardial steal phenomenon or embolization from in-situ thrombosis within the Vieussens' ring collaterals could explain the present finding.

Conflict of interest: None declared

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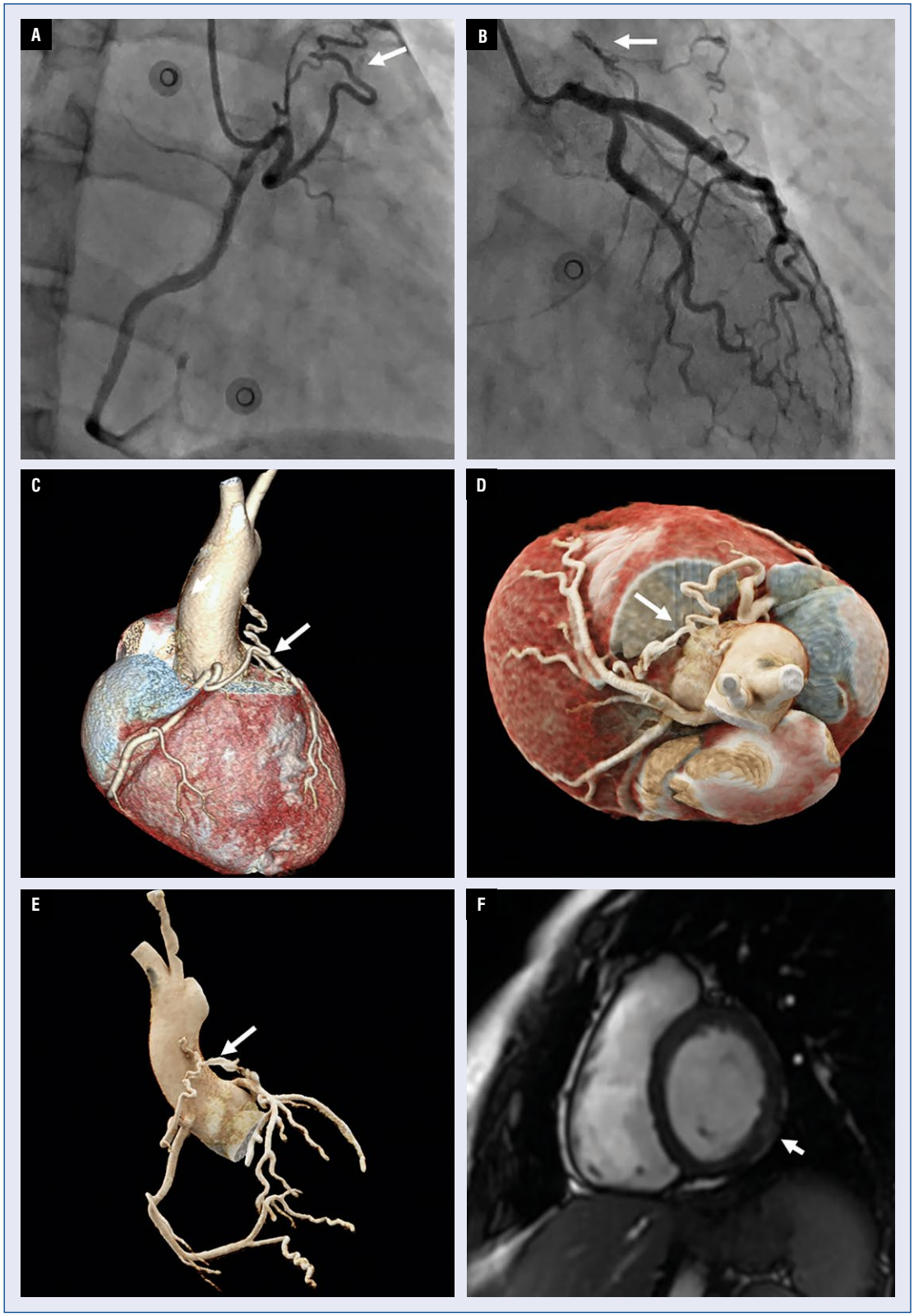

Figure 1. Vieussens' arterial ring on multimodality imaging; **A.** Selective coronary angiography of prominent conus branch from right coronary artery, RAO 30, CAU 15, arrow — conus branch with a collateral forming Vieussens' arterial ring; **B.** Coronary angiography of left coronary artery, RAO 30, CAU 15, arrows — collaterals of the Vieussens' ring; **C, D, E.** Computed tomography angiography revealed presence of vascular ring of Vieussens with connection between conus artery and left anterior descending artery (arrow); **F.** Cardiac magnetic resonance, T1-sequence, arrow — transmural late gadolinium enhancement in mid inferolateral segment of the left ventricle.