IMAGE FOCUS

doi:10.1093/ehjci/jeab141
Online publish-ahead-of-print 23 July 2021

Cardiac magnetic resonance diagnosis of septal acute myocardial infarction secondary to first septal perforator occlusion causing complete atrioventricular block

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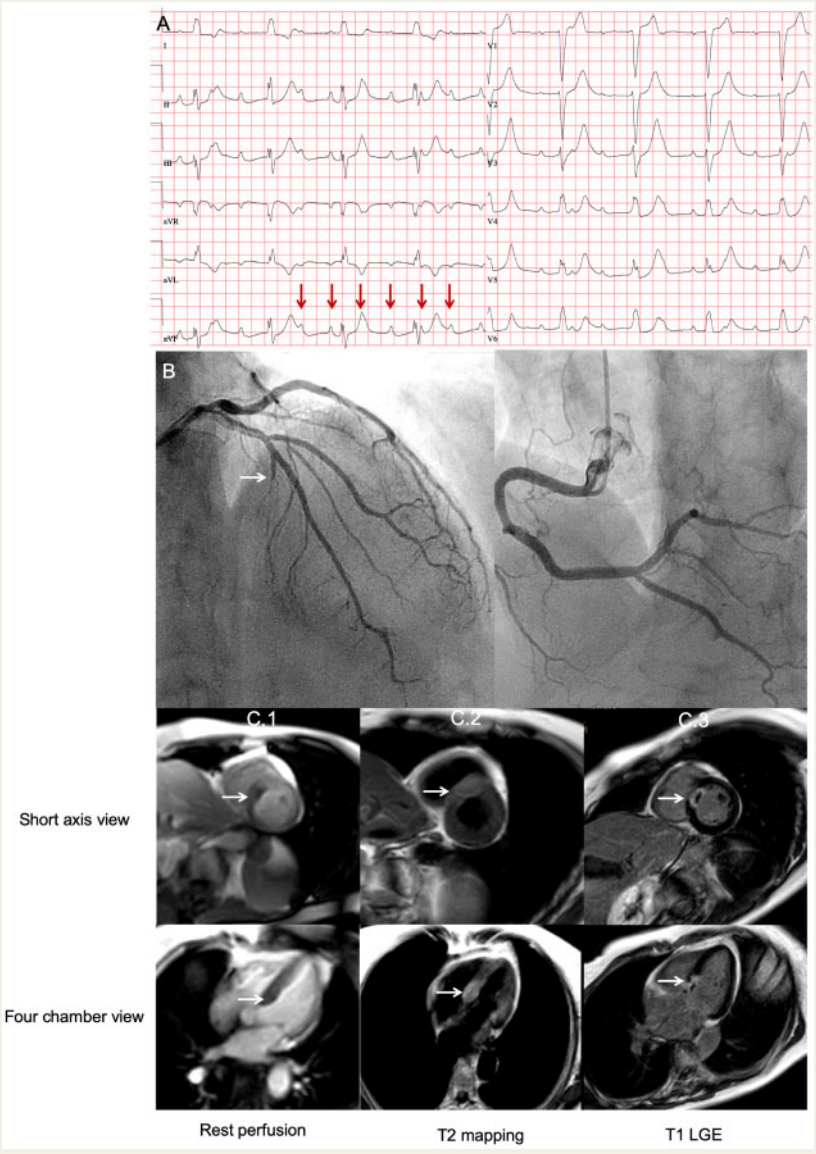
A 66-year-old woman presenting with syncope following chest pain was admitted to the intensive care unit. The electrocardiogram displayed a complete atrioventricular block with a left-bundle block branch appearance (*Panel A*). She was pain free upon admission and physical exam was normal. Hs-troponin I was elevated at 13276 ng/L ($N < 54$). Potassium level was normal at 3.6 mM ($N > 3.5$). Transthoracic echocardiography revealed preserved left-ventricle ejection fraction without wall motion abnormality. Given the rise in troponin level and the prior chest pain, a coronary-angiography was performed and was considered unremarkable (*Panel B*). A cardiac magnetic resonance (CMR) was then performed and revealed a basal-septal myocardial infarction (MI). Myocardial rest perfusion sequences showed a basal-septal perfusion defect (*Panel C.1*). T2-mapping images displayed myocardial oedema in the basal and mid-septal region (*Panel C.2*). T1-weighted late gadolinium enhancement (LGE) images revealed a myocardial transmural basal-septal hyperenhancement corresponding to the necrotic area surrounding a dark core which corresponds to the late microvascular obstruction (*Panel C.3*). A careful review of the coronary-angiography allowed to identify the culprit septal perforator artery (SP) occlusion (*Panel B*, white arrow). Given the late presentation of this septal MI and the persistence of complete atrioventricular block after 48 h, a permanent pacemaker was inserted.



The SP branches supply the anterior portion of the interventricular septum and the bundle of His. Complete atrioventricular block can rarely be consecutive to spontaneous first SP occlusion leading to septal MI. A definite diagnosis was established with CMR and allowed to implement a proper medical management with dual anti-platelet therapy, beta blockers, renin–angiotensin system inhibitors, and statin on top of permanent pacemaker insertion.