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Images in Cardiology

Isolated single coronary artery (RII-B type) presenting as an inferior wall myocardial infarction: A rare clinical entity

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ABSTRACT

Isolated single coronary artery without other congenital cardiac anomalies is very rare among the different variations of anomalous coronary patterns. The prognosis in patients with single coronary varies according to the anatomic distribution and associated coronary atherosclerosis. If the left main coronary artery travels between the aorta and pulmonary arteries, it may be a cause of sudden cardiac death. We present multimodality images of a single coronary artery, in which the whole coronary system originated by a single trunk from the right sinus of Valsalva with inter-arterial course of left main coronary artery. This rare type of single coronary artery was classified as RII-B type according to Lipton's scheme of classification. A significant flow-limiting lesions were found in the right coronary artery that was successfully treated with percutaneous coronary intervention.

A 56-year-old female presented with an acute inferior wall myocardial infarction, Killip's class I, thrombolysed. Echocardiography showed hypokinesia of the inferior wall of the left ventricle (LV) with LVEF of 45%. Coronary angiography demonstrated absence of coronary ostium in left coronary cusp (LCC). Selective cannulation of the right coronary ostium demonstrated a single coronary artery (SCA) originating from the right coronary cusp (RCC) as a short common trunk (CT) which branches into right coronary artery (RCA) and left main coronary artery (LMCA), LMCA further divides into left anterior descending (LAD) and left circumflex artery (LCX) (Fig. 1A–F). There were significant flow-limiting stenosis (90%) in proximal & mid portion of RCA (unpaired arrow heads in Fig. 1A, B) with normal LAD and LCX. Cardiac CT confirmed the course and origin of the coronaries with an inter-arterial course of the LMCA between the pulmonary artery and the aorta (Fig. 1G, H). This SCA anomaly was classified as RII-B subtype according to Lipton's classification.[1] As the patient was not having stress induce ischemia in LAD territory on stress nuclear scintigraphy, percutaneous coronary intervention (PCI) was performed successfully with drug eluting stents in proximal and mid RCA lesions.

A single coronary artery, in the absence of other cardiac disease, is a rare coronary artery anomaly with approximate incidence of 0.024–0.066% in general population and its subtype RII-B is rarer still among all possible variations of SCA, with RII-S being the most common subtype of R-type SCA.[2] Prognosis of individuals with SCA is unclear and no

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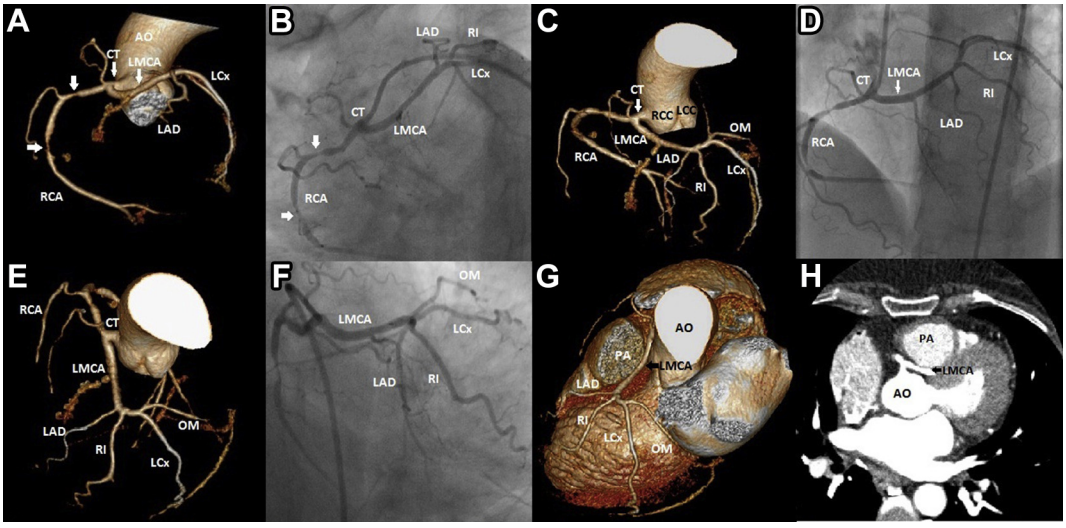

Fig. 1 – A, C, E (3-Dimensional volume rendered computed tomographic images of coronary tree) and B, D, F (coronary angiographic images of LAO caudal, LAO cranial, PA caudal views respectively) showed single coronary artery origin from right sinus of Valsalva as short common trunk (CT) bifurcate into right coronary artery (RCA) and long left main coronary artery (LMCA), LMCA further divided into type I small left anterior descending coronary artery (LAD), Ramus intermedius (RI) and left circumflex artery (LCx).RCA showed flow-limiting stenosis (90%) in proximal and mid portion (unpaired arrow head in Fig. A, B) G (volume rendered image of 3-Dimensional cardiac computed tomography (CCT)), H (short axis of CCT) demonstrated intra-arterial course of LMCA (black arrow head) between aorta (AO) and pulmonary artery (PA).RCC = right coronary cusp, LCC = left coronary cusp, OM = obtuse marginal branch.

guidelines for treatment of this condition exist.[3,4] The course and associated coronary atherosclerosis should guide the therapy. PCI with stenting may be a feasible therapeutic option for an SCA in selected patients.

Supplementary video related to this article can be found at http://dx.doi.org/10.1016/j.ihj.2014.05.021

Conflicts of interest

All authors have none to declare.

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