A very unusual cause of exercise-induced ventricular arrhythmias in the athlete.

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Topic(s):
Cross-Modality and Multi-Modality Imaging Topics

Clinical case: A 39 yo asymptomatic male, agonist cyclist, was suspended from physical activity after ECG-Holter evidence of exercise-induced ventricular ectopic beats (VEBs) and couples, with RBBB morphology and superior axis (Figure 1, panel A; asterisks). At Echocardiography, biventricular systolic function, kinetics and mass resulted to be normal, as well as the heart valves. According to the clinical history and the VEB morphology, 1.5 T CMR was carried out in the suspicion of a left dominant Arrhythmogenic Cardiomiopathy. Left ventricle was mildly dilated (End Diastolic Volume 110 ml/mq) with normal ejection fraction (EF); a small region of akinesia at the basal-mid infero-lateral and inferior segments was evident. Myocardial edema or adipose infiltration were excluded; a transmural stria of Late Gadolinium Enhancement at the akinetic region suggested a prior myocardial infarction (Figure 1, panel B and C; triangles). Right ventricular kinesis and EF were normal. Stress-SPECT showed discrete hypoperfusion during both exercise and rest in the basal-mid infero-lateral and inferior segments, in the absence of inducible ischemia. Coronary angiography showed no significant coronary stenosis while an abnormal origin of the right coronary artery from the left coronary sinus was assumed (Figure 1, panel D; arrow) and confirmed by a subsequent Coronary CT Angiography, which demonstrated an interarterial course (Figure 1, panel E and F; continuous arrows) with a proximal intramural aortic course of the right coronary artery (Figure 1, panel F; dotted arrow). According to the absence of viable myocardium at CMR and the absence of ventricular arrhythmias induced at EPS, a conservative management was preferred over Heart Surgery. Sotalol was started and the patient remained asymptomatic without any repetitive ventricular arrhythmias at ECG-Holter at 5 years follow-up. Conclusions: Multi-modality imaging allowed us a challenging diagnosis of a coronary artery anomaly with a very unusual clinical presentation. CMR findings drastically redirected our initial diagnostic hypothesis and provided precious elements to guide us to a proper therapy. In the presence of exercise-induced ventricular arrhythmias and non-conclusive first-level cardiac imaging exams, CMR and multi-modality imaging may represent a tempting tool for the physician, with potential huge impact on patient prognosis and treatment options.
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