

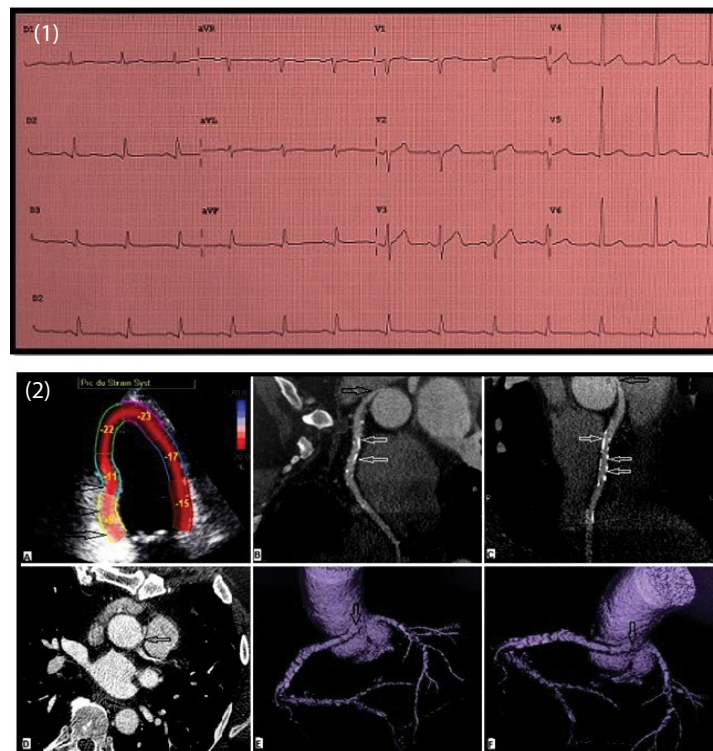
## Case Blog

### Title: Anomalous Origin of the Right Coronary Artery with Inter-Aorto-Pulmonary Course Highlighted by ECG-gated Cardiac CT Angiography

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**Figure 1:** Electrocardiogram showed sinus rhythm, poor R wave progression in anterior precordial leads and small Q waves with isoelectric T waves in inferior leads. **Figure 2:** A: Transthoracic echocardiography showing reduced regional myocardial longitudinal strain (-9% and -11% respectively in basal inferior and mid-inferior wall (Dark arrows). B, C: Curved multiplanar reformation (MPR) of the Right Coronary Artery (RCA) with anomalous origin from the contralateral aortic sinus of valsalva and inter-arterial course (between the aorta and pulmonary trunk). Presence of ostial and post-ostial part severe luminal narrowing (Dark arrows) at the takeoff portion of RCA. Calcifications of mid RCA without significant stenosis (White arrows). D: Short axis slice of CCT demonstrated inter-aorto-pulmonary course of RCA originating from left aortic sinus and separately from the main left coronary artery. E, F: 3-Dimensional volume rendered computed tomographic images of coronary tree highlighted the origin (Dark arrows) and course of the RCA.

### Case presentation

A 46-year-old male was referred to the echo laboratory for further investigations of a 6-months history with typical chest pain that is predictably exertional. His past medical history was largely unremarkable and so was his cardiac physical examination. Electrocardiogram showed sinus rhythm, poor R wave progression in anterior precordial leads and small Q waves with isoelectric T waves in inferior leads (Figure 1). Transthoracic echocardiography revealed prominent basal inferior and mid inferior hypokinesia with reduced regional myocardial longitudinal strain (-9% and -11% respectively) (Figure 2A). Left ventricular ejection fraction was estimated to be 50%. Myocardial perfusion scintigraphy was positive for a significant reversible stress-induced ischemia of the inferior wall. Coronary angiography showed normal left coronary system and anomalous origin of the right coronary artery (RCA). For further assessment, ECG-gated cardiac CT angiography (CTCA) was done and revealed RCA arising from left aortic sinus separately of left coronary artery, with inter-aorto-pulmonary course and ostial-post-ostial part severe luminal narrowing at the takeoff portion (Figures 2B-2F), coronary artery calcifications of the mid-RCA without significant stenosis (Figures 2B and 2C) and no significant atherosclerotic disease of left coronary system. Surgical treatment was required. In fact, aggressive surgical

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management is often recommended to avoid sudden cardiac death, especially in documented coronary ischemia as a result of a coronary compression when coursing between the great arteries. The CTCA has an incontestable place as a first imaging modality tool for the assessment of the origin and course of coronary arteries and the detection of inter-aortopulmonary course that implies an appropriate surgical management.

#### **References**

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