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Case report

Anomalous origin and course of left coronary artery—Cause of cardiac arrest in a young female athlete



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ABSTRACT

Coronary artery anomalies represent a rare condition in the general population. Our case report describes a young female patient who survived sudden cardiac death caused by the left coronary artery arising atypically from the right coronary sinus.

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Introduction

Congenital anomalies of coronary arteries are rare but in some cases potentially life threatening. They are usually an incidental finding on coronary angiography. On the other hand, it has been described that they are the second leading cause of death in young athletes [1–3]. According to Angelini et al., a work that examined coronary findings in 1950 patients a congenital coronary anomaly was found in 110 patients (5.64%). An anomalous origin of the left coronary artery (LCA) from the right coronary sinus was found in only 3 patients (0.15%). In all of the cases the anomalies were an incidental finding during routine angiography [4]. Our case report describes a young active female athlete with this rare coronary anomaly who survived sudden cardiac death.

Case report

A 33-year-old healthy female athlete was admitted to our department after she collapsed during a run. After she collapsed, unassisted cardiopulmonary resuscitation (CPR) was administered right away as there was gasping and an alteration of consciousness. Once the ambulance arrived, the first rhythm was ventricular fibrillation. The patient was defibrillated and sinus rhythm was restored, spontaneous circulation was restored after 13 min. Once in sinus rhythm, the electrocardiogram (ECG) showed elevations of ST segments on the anterior wall (Image 1). The patient was therefore transported to the nearest cathlab for an emergent coronary angiography. In the cathlab we performed an echocardiography examination that showed severe dysfunction of the left

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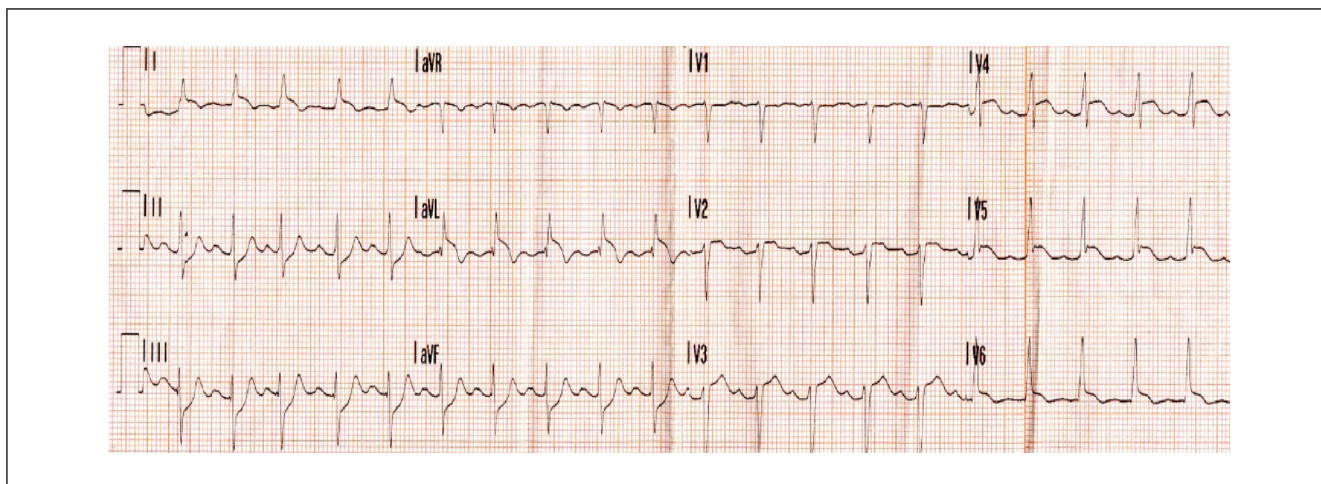


Image 1 – ECG before admission.

ventricle with altered anterior wall motion. As a myocardial infarction was suspected, a coronary angiography was performed. During visualization of the LCA, its anomalous origin from the right coronary sinus of Valsalva was found. With aid of all available diagnostic catheters only a semi selective image of the LCA was acquired. All of the arteries in this area had normal blood flow and no atherosclerosis was found (Image 2). The right coronary artery (RCA) and its area also had normal blood flow and no atherosclerosis. Due to the finding of the anomalous LCA a computed tomography (CT) angiography was also performed. The CT scan confirmed the anomalous origin of the LCA from the right coronary sinus of Valsalva, further inter-arterial course of the LCA between the aorta and the pulmonary artery was found (Image 3). A

stenosis of the LCA was not proved. Since there was good (TIMI 3) perfusion in all of the coronary arteries at this time, no intervention in the acute phase was performed. The patient was transported to the intensive care unit (ICU), therapeutic hypothermia was initiated. As the patient had signs of inflammation and incipient sepsis, antibiotics were administered. The patient had hemodynamic instability and she required high doses of vasopressors and inotropic agents. We therefore transported the patient to a super specialized cardiocentre where mechanical circulatory support and cardiac transplantation could be performed if needed.

Over the next period of time, the hemodynamic state of the patient improved, vasopressor and inotropic agents were withdrawn and she was extubated. After extubation, the

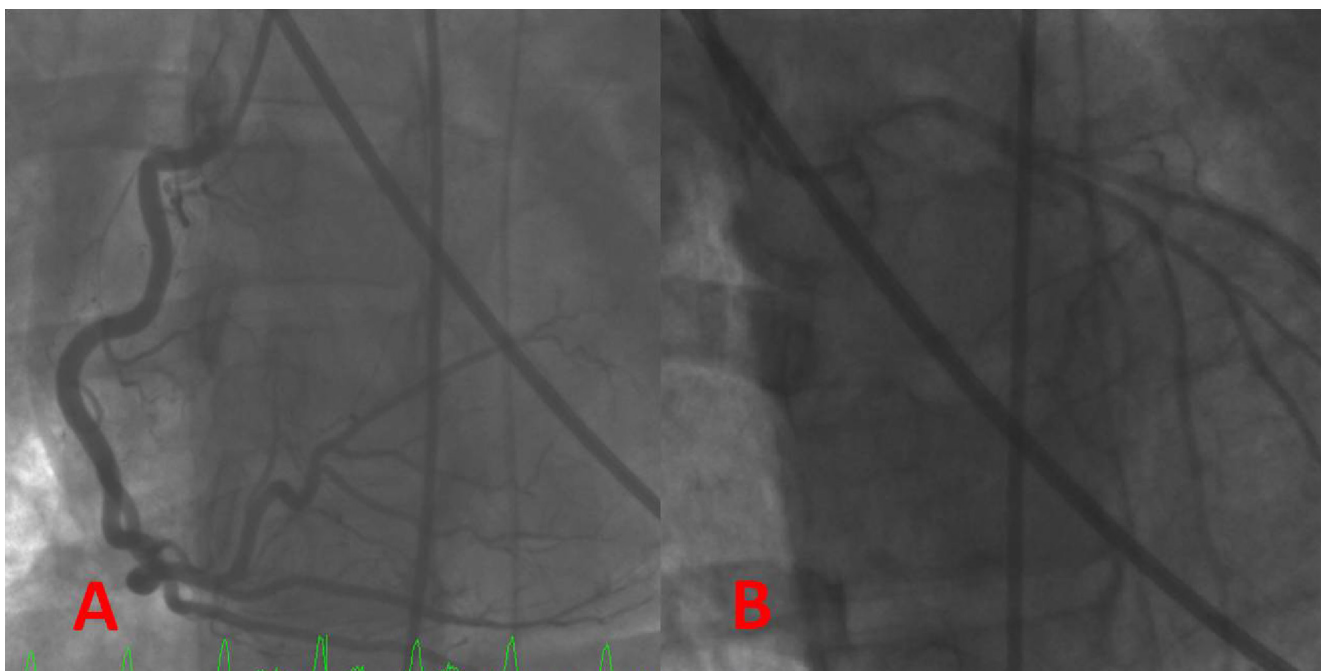


Image 2 – Selective coronary angiography of RCA (A) difficult semi-selective coronary angiography of LCA (B).

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