

Case Report

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Anectodal Report of Anomalous Circumflex Associated with Pathological Scintigraphy in a Patient with Atypical Chest Pain

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Abstract

The incidence of Coronary Artery Anomalies (CAA) in routine Coronary Angiography(CAG) is between 0.6% and 1.5%. Most anomalies are not of clinical significance, but some are related to angina, dyspnoea, syncope, acute myocardial infarction andsudden death. Diagnosis and adequate imaging of CAA are crucial for appropriate patient management, especially in patient candidates for Percutaneous Coronary Intervention (PCI) and cardiac surgery. This report describes the anomalous origin of the Left Circumflex Artery (LCX), arising by the right sinus of Valsalva and associated with the presence of hypoplasic Left Anterior Descending Coronary Artery (LAD) that correlates with myocardial scintigraphy findings of reduced uptake in the anterior and inferior wall of left ventricle.

Keywords: Coronary anomalies; Coronary angiography; Myocardial scintigraphy; MDCT

Case Report

A 75-year-old man affected by dyslipidemia, smoking hystory, hypertension and with family history of cardiovascular disease, was admitted to our hospital because of atypical chest pain episodes, whose symptoms onset goes back to 5 months ago. Physical examination revealed a heart rate 75 beats/min and a blood pressure of 130/75 mmHg. Heart sounds were normal and there was a 2/6 systolic ejection murmur at the apex. Laboratory results showed no abnormality and no raise of cardiac enzymes. Electrocardiography showed normal sinus rhythm with no ST-T changes. An echocardiogram revealed normal chamber size and left ventricular wall motion with mild mitral insufficiency. Holter electrocardiogram showed no arrhythmias. Actually, patient underwent stress/rest thallium-201 single-photon emission cardiac tomography (SPECT) that revealed, during exercise test, a defect in uptake of the radioisotope in the basal portion of the anterior wall and in the inferior side of the left ventricle, that completely regress during the rest phase (Figure 1). On the other hand, treadmill test showed ST depression in anterior precordial leads, in absence of symptoms. Finally, patient underwent CAG, in order to exclude suspicion for Coronary Artery Disease (CAD). Coronary angiography documented the absence of critical coronary narrowings, except for a mild plaque in the second segment of right coronary artery, associated with the presence of anomalous origin of the left circumflex artery, arising by the right sinus of Valsalva. Moreover, Left Descending Artery (LAD) was poorly represented in distal vascular bed and does not surround the apex of the left ventricle, while a well-developed intermediate branch (IR) supplied lateral myocardial wall (Figure 2A-C). In our opinion, the presence of CAA findings well explained radioisotope uptake defects assessed by myocardial scintigraphy. Considering the key role of the proximal course of the anomalous coronary artery in relation to the great vessel in prognostic stratification, we decided to perform a high resolution 64-slice Multi Detector Computed Tomography (MDCT) that clearly documented aberrant circumflex origin from right aortic sinus of Valsalva with a further retroaortic course of CX within the atrioventricular groove. The Cx was originating as a slit like ostia wih acute angulation from the right sinus. Anomalous LCX that represented the most frequent anatomic variant and is usually associated with a good outcome and a normal diameter of mean pulmonary artery (Figures 2D-F and 3A-C). Combined cardiac CT and SPECT were thus crucial techniques in determining mechanisms and proper therapy. The patient was treated with metoprolol, 200 mg was given once daily with rapid improvement of angina symptoms. Patients six-months follow-up was event-free.

Discussion

Ectopic origin of the Cx artery from the right sinus of Valsalva or the right coronary artery was first described by Antopol and Kugel in 1933 with prevalence of 0.4-0.8% in angiographic series [1]. Coronary artery anomalies have been identified in 0.6 to 1.5% of coronary angiograms [2-3]. Anomalous origin of the circumflex artery from the right sinus of Valsalva is the common artery anomaly which is thought to be of no clinical significance per se. However, the recognition and adequate visualization of the anomaly is essential for proper patient management.

Definitive diagnosis of coronary anomalies is generally made by coronary angiography [4]. Although this anomaly is usually benign and asymptomatic it was reported that it may cause ischemia, sudden death and myocardial infarction. Failure to recognize the anomaly can be hazardous to patient management. This report describes the anomalous origin of the LCX [5], arising by the right sinus of Valsalva associated with the presence of small LAD, clearly correlating with SPECT findings. Coronary anomalies represent a rare clinical condition that may benefit from the integration of most advanced diagnostic techniques for appropriate clinical management and adequate selection of patients features suitable for PCI or cardiac surgery. Even if noninvasive investigations methods, such us myocardial scintigraphy, may recognize defects in radioisotope uptake, guiding selection of patients with highest suspicion for coronary artery disease, only invasive assessment by CAG settles as the gold standard technique for confirming diagnosis. Recently, these anomalies have been recognized using noinvasive or minimally invasive techniques like transthoracic and transesophageal echocardiography [6]. Furthermore, the variable clinical presentation and prognosis of coronary anomalies crucially

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Figure 1: Stress/rest thallium-201 single-photon emission cardiac tomography (SPECT) showing reversible perfusion defects in the basal portion of the anterior wall and in the inferior side of the left ventricle, that completely regress during the rest phase.



Figure 2: (A-C-Upper row) Coronary angiography documented the absence of critical coronary narrowings associated with the presence of anomalous origin of the left circumflex artery, arising by the right sinus of Valsalva. Left discending artery (LAD) was poorly represented in distal vascular bed and does not surround the apex of the left ventricle, while a well developed intermediate branch (IR) supplied lateral myocardial wall. (D-F-Lower row) Volume Reconstruction (VR) of the coronary tree. Those reconstructions demontraste the integrity of coronary vessels and the abnormal origin of Circumflex artery with retobulbar course.

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depends on the proximal course [7] of the anomalous coronary artery in relation to the great vessels that can be accurately clarified by MDCT [8]. In conclusion, conventional CAG still represents the gold standard procedure for posing diagnosis of coronary artery anomalies while the integration with coronary MDCT is fundamental for defining anatomic variants.

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