Anomalous Origin of Left Main Coronary Artery from Right Sinus of Valsalva: A Case Report

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Abstract

We present a case of a 79 years old man in whom diagnostic coronary angiography showed anomalous left main arising from the right sinus of Valsalva and followed an intraseptal course beneath right ventricular infundibulum. He also had obstructive lesion in left circumflex artery. In view of his recent ischemic symptoms he was successfully treated by left circumflex angioplasty.

Keywords: Coronary artery anomalies; Coronary angiography

Introduction

Coronary artery anomalies are found in 0.6% to 1.55% of patients who undergo coronary artery radiographic tomography [1-5] and the increasing use of diagnostic coronary angiography (CAG) is uncovering even more such abnormalities. Anomalous origin of the left main coronary artery (LMCA) from the right sinus of Valsalva is reported in 0.09% to 0.15% of cases [1-6]. Indeed, most coronary anomalies are found incidentally during CAG. Although these anomalies are present at birth, relatively few manifest cardiac symptoms in childhood. Anomalous origin of a coronary artery does not usually lead to myocardial ischemia.

The origin of the LMCA from the right sinus of Valsalva is one of the rarest anatomic variations of the coronary artery circulation. We report a case of single ostium originating from the right sinus of Valsalva, giving rise to an anomalous LMCA and right coronary, confirmed by coronary angiography.

Case

A 79 years old Indian male presented to the emergency department with complaint of chest heaviness. He sought medical attention when his chest discomfort did not abate even after seven days. His past medical history included medically controlled diabetes and hypertension. On general physical examination patient was seen to be anxious, his heart rhythm was regular with a rate of 90 beats per minute; the blood pressure was 130/80 mmHg and respiration was thoraco-abdominal with a rate of 20 breaths per minute. Cardiac auscultation revealed a left ventricular fourth heart sound. Findings from review of the systems, other than as reported above were normal. Baseline electrocardiogram (Figure 1) revealed left axis deviation and left bundle branch block with secondary ST-T changes. Trans-thoracic echocardiography revealed concentric left ventricular hypertrophy, mild aortic regurgitation, grade 1 left ventricular (LV) diastolic dysfunction and LV ejection fraction of 55%.

Discussion

The origin of the LMCA from the right sinus of Valsalva is one of the rarest anomaly; the incidence ranges from 0.09% - 0.15% [1-5]. Anomalous origin of the LMCA from the right sinus of Valsalva can be classified into 4 major groups according to the course taken by the LMCA in relation to the aorta and pulmonary trunk en route to the LV [7-11].

1. The septal course beneath the right ventricular infundibulum, 2) the anterior course, 3) the retro-aortic course, and 4) the interarterial course between aorta and main pulmonary artery. Among all deployed from distal to proximal segment and adequately post dilated with noncompliant balloon. The remainder of his hospitalization was uncomplicated, and he was discharged 2 days after the procedure. His predischage echo showed concentric left ventricular hypertrophy, mild aortic regurgitation, grade 1 left ventricular (LV) diastolic dysfunction and LV ejection fraction of 55%.

Figure 1: Baseline electrocardiogram showing normal sinus rhythm, left axis deviation of QRS complex, left bundle branch block with secondary ST-T changes.

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superior portion, confirming its septal variant. Septal perforators originating from the LMCA further corroborate this anomaly. Considering its benign course among other LMCA anomalies we planned for LCx angioplasty in view of patient symptoms. We achieved a satisfactory result with coronary angioplasty and his symptoms have completely resolved after angioplasty (Figure 2C,2D).

**Conclusion**

Our 79-year-old patient is a unique case of a single ostium from the right sinus of Valsalva (single coronary artery) which is giving right and left coronary system. The right coronary system is normal in course and anomalous LM runs a septal course before dividing into left anterior descending and left circumflex. We conclude that the anomalous origin of the LMCA is not always malignant. A meticulous approach is imperative to analyse coronary angiograms carefully and treatment for such a condition should be tailored to the individual patient.

**References**