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Serpentine Left Circumflex Coronary Artery Aneurysm as a Rare Cause of Angina with Contrast-Enhanced Multislice Computed Tomographic Evaluation

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ABSTRACT

Left circumflex coronary artery anomalies are rare causes of cardiac symptoms, especially in the adult population. Herein we describe a case of a 40-year-old man presenting with stable angina who was found to have aneurysmal formation and fistulization of the left circumflex coronary artery to the coronary sinus. Contrast-enhanced multislice computed tomography was very useful in our case for the diagnosis of such anomalies.

INTRODUCTION

Coronary artery fistulas are rare, with a reported incidence of 0.5% of coronary angiograms [Yamanaka 1990]. Left circumflex coronary artery (LCX) to coronary sinus arteriovenous (AV) fistula is extremely rare, and presentation may include angina pectoris, heart failure, or infective endocarditis [Gupta 2008]. Emerging imaging modalities, including contrast-enhanced multislice computed tomography (MSCT), are increasingly used in the diagnosis of coronary artery anomalies. We present in this article our diagnostic and surgical approaches of a bulky LCX to coronary sinus AV fistula in a symptomatic adult.

CASE REPORT

An otherwise healthy 40-year-old man presented with a 6-month history of stable angina. The electrocardiogram showed normal sinus rhythm with no significant ST-T changes. Global left ventricular function was preserved by 2-dimensional echocardiographic analysis. The ejection fraction was 65%. No valvular disease was identified. Stress myocardial perfusion imaging was suggestive of inferior wall ischemia. Coronary angiogram demonstrated fistula formation between the LCX and the coronary sinus, without significant atherosclerotic disease. MSCT imaging revealed significantly dilated and tortuous LCX aneurysm, originating from the left main coronary artery, with AV fistula to the coronary sinus, draining just proximal to the insertion at the right atrium. Surgical intervention was performed via median sternotomy off cardiopulmonary bypass. Upon opening the pericardium, a bulky "serpentine-like" aneurysm of the LCX was identified along the left atrioventricular groove. It was subsequently traced to the coronary sinus, where the AV fistula was identified. No evidence of rupture or hemorrhage was seen. We opted to ligate the fistula close to the sinus with a proline suture. Resection of the aneurysm, coronary bypass grafting, or valvular repair were not needed. The patient's hospital course was uncomplicated, with resolution of the angina.

DISCUSSION

Coronary artery fistulas are surgically defined as hollow vascular connections from a coronary artery to a cardiac chamber or major blood vessel [Latson 2007]. They should be considered in the differential diagnosis of murmurs, arrhythmias, heart failure, endocarditis, and myocardial ischemia in adults [Gupta 2008]. The shunting flow usually governs the presentation, with good prognosis overall.

With advancement in cardiac imaging, MSCT proved vital in the diagnosis of coronary anomalies. The origin, complex course, and connections of the AV fistula were well delineated in this case. Furthermore, it showed the anatomy of the fistula in relation to the other cardiac structures in the mediastinum, offering unprecedented help in planning the surgical approach, averting the need for cardiopulmonary bypass. Surgical [Nakayama 2011] and endovascular approaches [Tacoy 2009] have been reported in the management of coronary AV fistulas, with equivalent success.

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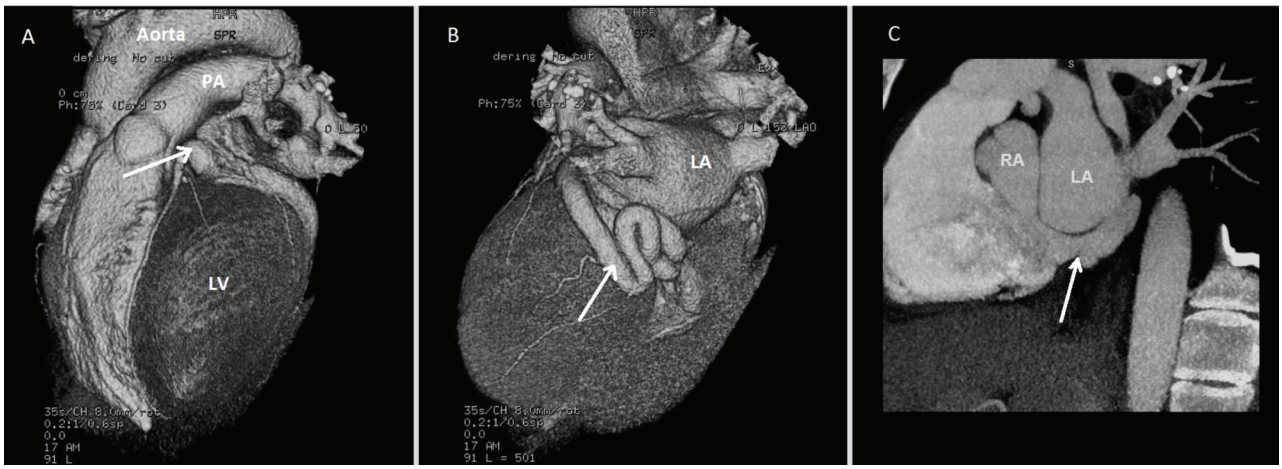

Figure. A, 3-dimensional (3D) anterolateral view demonstrating the origin of the fistula from the left main coronary artery (arrow). B, 3D posterior view delineating the size and course of the fistula in the atrioventricular groove (arrow). C, sagittal 2-dimensional view of the arteriovenous fistula (arrow) to the coronary sinus and right atrium. PA indicates pulmonary artery; LV, left ventricle; LA, left atrium; RA, right atrium.

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