Progressive Sinus of Valsalva Aneurysm causing Complete Atrioventricular Block

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Introduction: A sinus of Valsalva aneurysm (SOVA) is abnormal dilatation of the either aortic sinuses, area of the aortic root between the aortic valve annulus and the sinotubular junction. Their clinical presentation may range from being asymptomatic as an incidental finding on cardiac imaging to symptomatic presentations related to the compression of adjoining structures or intracardiac shunting caused by rupture of the SOVA mostly into the right side of the heart. The compression leads to findings of tricuspid valve regurgitation, right ventricular outflow tract (RVOT) obstruction and rarely complete heart block (CHB). We present the case of a 44 year old male who had a permanent pacemaker implanted for complete atrioventricular block (CAVB) after an initial undetected diagnosis of an unruptured SOVA later confirmed by cardiac computed tomography (CT).

Methods: N/A.

Result: A 44 year old male presented with a history of chest tightness, vertigo and nausea as well as an episode of syncope in the emergency room. Physical examination revealed severe bradycardia of 30 bpm, blood pressure of 98/60 mmHg and the electrocardiographic monitor showed CAVB. There was no history of chest trauma, fever or exposure to sexually transmitted diseases and he did not have a marfanoid appearance. Complete hemogram and biochemical parameters were within normal limits. VDRL test and TPHA test were negative. A bedside echocardiography revealed a normal sized heart with left ventricular ejection fraction of 76%. No aortic stenosis or significant aortic regurgitation was noted (Figure 1A). A chest computed tomography showed aneurysmal dilatation of the right sinus of Valsalva (SVA)(Figure 1 B). Patient received a temporary pacemaker while coronary angiogram revealed patent coronary blood vessels. A diagnosis of CAVB due to unruptured sinus of Valsalva aneurysm complicated by low cardiac output syndrome was made and patient was counselled for permanent pacemaker implantation which he received 3 days later. Patient was also counselled for surgery for the unruptured SOVA but he was reluctant. Four months later patient presented again with complaints of worsening chest pain and a repeat echocardiogram showed the right SOVA had significant interval change and dissecting (Figure 1C) into the inter-ventricular septum. A cardiac MRI also confirmed the progressive glowing in size of the right SOVA, which was very close to the insertion site of right ventricular lead (Figure 1D). We also noticed that the percentage of ventricular pacing increased during follow-up in the clinic. Patient is now willing to proceed with surgery.

Conclusion: Unruptured SOVAs though rare, are potential causes of significant cardiovascular morbidity such as CAVB if undiagnosed. A high index of suspicion is needed and echocardiography is a simple yet effective imaging modality for diagnosis of most cases.