A 14-year-old female presented to us with a history of palpitation and progressive dyspnoea for the last 2 months. She also had a history of prolonged fever 4-months back. On examination, she had a pulse rate of 110 bpm and a blood pressure of 110/60 mm Hg. Her precordial examination revealed a hyperdynamic and downwards displaced cardiac apex beat. The cardiac auscultation revealed a pansystolic murmur with thrill along the left parasternal border and an early diastolic murmur with ejection systolic murmur in the left 3rd intercostal space. The chest examination and systemic examination were normal. The chest radiograph (PA view) showed cardiomegaly (CT ratio 0.65) with prominence of main pulmonary artery segment (Figure 1A). The 12-channel ECG showed left ventricular hypertrophy with diastolic overload pattern (Figure 1B). Two-dimensional transthoracic echocardiography in parasternal long-axis view showed a high-velocity turbulent color jet arising below the aortic valve from the left ventricular outflow tract (LVOT) and going toward the right ventricular outflow tract (Figure 2A; Movie I in the online-only Data Supplement). In parasternal short-axis view, a large multi-loculated structure was seen, lying on the right side of the aorta and having extension toward the right ventricular outflow tract (Figure 2B; Movie II in the online-only Data Supplement). The color Doppler echocardiogram showed a turbulent jet filling the multiloculated structure, and a second high-velocity turbulent jet was seen across the right ventricular outflow tract attributable to infundibular narrowing (Figure 2C and 2D; Movie III in the online-only Data Supplement). Tilted parasternal short-axis view showed the multiple cavities surrounding the aorta (Figure 3A; Movie IV in the online-only Data Supplement). Apical 4-chamber view showed 2 circular echolucent cavities lying on the opposite ends of the atrioventricular groove (Figure 3B; Movie V in the online-only Data Supplement). Apical 5-chamber view showed the origin of the multiloculated structure from the LVOT and filling with turbulent jet (Figure 3C and 3D; Movie VI in the online-only Data Supplement). The subsequent cardiac catheterization with contrast left ventriculogram (left lateral view) revealed a large pseudoaneurysm with a narrow neck arising from the aorta.

Figure 1. A, Chest X-ray posteroanterior view showing cardiomegaly with prominence of the left heart border. B, Twelve-channel ECG showing left ventricular hypertrophy with diastolic overload pattern.

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the LVOT (Figure 4A; Movie VII in the online-only Data Supplement) and extending toward RV infundibulum, with moderate aortic regurgitation. The right ventriculogram (left lateral view) showed severe narrowing of the subpulmonic infundibulum attributable to compression by the pseudoaneurysm (Figure 4B; Movie VIII in the online-only Data Supplement). The 64-slice computed tomography (sagittal view) showed a large pseudoaneurysm, arising from the LVOT (Figure 5A). The transverse view showed a jet filling the multiloculated pseudoaneurysm (Figure 5B) with normal
coronary arteries. The multidetector CT scan in lateral view showed the compression of RV infundibulum by the pseudoaneurysm (Figure 5C). The CT volume–rendered imaging showed the origin (Figure 6A) and course of giant (14.5×6 cm) pseudoaneurysm with its right end extending into the right portion of the atrioventricular groove along with the right coronary artery and left end traversing into the left portion of the atrioventricular groove (Figure 6B). The blood culture from the patient was negative for any growth of organism, but still the most probable cause of LVOT pseudoaneurysm in this case was previous infective endocarditis of the aortic valve. The patient was referred to the cardiovascular surgery unit for surgical management but, while awaiting surgery, she had a sudden hemodynamic deterioration followed by cardiac arrest from which she could not be revived.

Discussion

Left ventricular outflow tract pseudoaneurysm is a rare entity that has been reported after infective endocarditis, post aortic valve replacement and after aortic root surgery in congenital heart disease. The natural history of these pseudoaneurysms varies from asymptomatic course to severe complications in the form of rupture into the pericardial cavity or left atrium, thromboembolism and stroke, distortion of the mitral valve causing mitral regurgitation, and compression of the adjacent structures including coronary arteries producing angina. Multidetector computed tomography or MRI provide excellent delineation of the pseudoaneurysm. Surgical repair is recommended even in asymptomatic patients to prevent complications; however, in high-risk surgical cases, percutaneous closure is reported with good results. Herein, we described an unusual case of huge, multiloculated left ventricular outflow tract pseudoaneurysm having an unusual extension into the atrioventricular groove. To the best of our knowledge, this is the largest LVOT pseudoaneurysm reported in the literature.

Disclosures

None.

References


Figure 4. A. Left ventricular angiogram (left lateral view) showing a large pseudoaneurysm (Ps) with narrow neck (black arrows) arising from the left ventricular outflow tract. B. Right ventricular angiogram (left lateral view) showing compression of the right ventricular infundibulum by the pseudoaneurysm (Ps). Ao indicates aorta; LV, left ventricle; and RV, right ventricle.

Figure 5. 64-slice CT angiogram. A, Sagittal view showing origin of the pseudoaneurysm (Ps) from the left ventricular outflow tract B, Transverse view showing multiloculated pseudoaneurysm filling with jet from LVOT C, Left lateral view showing compression of the right ventricular (RV) infundibulum by the pseudoaneurysm (Ps). Ao indicates aorta; LV, left ventricle; and RV, right ventricle.
Figure 6. 64-slice CT angiogram volume-rendered imaging showing (A) origin of the multiloculated pseudoaneurysm (Ps) from the left ventricular outflow tract (left lateral view) and (B) giant pseudoaneurysm (Ps) lying in the atrioventricular groove and causing extrinsic compression of the RV infundibulum. Ao indicates aorta; LV, left ventricle; and RV, right ventricle.
Giant Multiloculated Left Ventricular Outflow Tract Pseudoaneurysm Causing Severe Extrinsic Compression of Subpulmonic Infundibulum

Sudarshan Kumar Vijay, Ram Kirti Saran, Deepak Ameta, Rishi Sethi, Sharad Chandra, Sudhanshu Kumar Dwivedi, Varun Shankar Narain, Aniket Puri, Pallavi Aga and Neera Kohli

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