Aortomitral intervalvular fibrosa aneurysm—a rare case

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Abstract

Aortomitral intervalvular fibrosa aneurysm is a rare entity but a life-threatening condition. We present a case of young male presented with NYHA functional class IV dyspnea where aneurysm ruptured into the left atrium.

Keywords Non-coronary cusp · Anterior mitral leaflet · Aortomitral intervalvular fibrosa

Introduction

Aortomitral intervalvular fibrosa aneurysm has been reported as pseudoaneurysm and its communication to left atrium has been seen in literature [1]. Most common etiology of this condition has been reported to be infective endocarditis. [1, 2] In this case report, we present a case of this condition with idiopathic etiology.

Case report

A 28-year-old male presented with complaints of acute onset New York Heart Association (NYHA) class IV dyspnea for the last two days. He had no history of acute chest pain, fever, tuberculosis, diabetes mellitus, or any features of congestive cardiac failure. On examination, the patient had a pulse rate of 108 per minute with regular rhythm. Blood pressure was 96/52 mmHg in the right upper limb in supine position and respiratory rate was 28 breaths per minute with involvement of accessory muscles and nasal flaring. Arterial oxygen saturation was 96% at inhaled oxygen. On cardiovascular

examination, apical impulse was normal and a systolic murmur was present at apex of grade 3/6 in intensity and better heard in expiration. On respiratory examination, bilaterally equal air entry was present with basal crepitations.

On workup, the patient had deranged hepatic function on blood investigations. Chest radiograph showed gross cardiomegaly with prominent pulmonary vascular markings and blunting of right cardiophrenic angle. Electrocardiography (ECG) was suggestive of normal sinus rhythm with heart rate of approximately 100 per minute and normal axis. Two dimensional (2D) echocardiography was suggestive of possibility of submitral left ventricular aneurysm communicating with left atrium with severe mitral regurgitation (Fig. 1 and video). Cardiac computed tomography (CT) angiography was reported a ruptured aneurysm arising from subaortic region from lateral wall of left ventricle which was abutting and compressing anterior wall of the left atrium and was reaching up to left superior pulmonary vein. Preoperative CT films were not available with the patient as it was performed prior to admission in our institute.

During surgery, standard median sternotomy was performed. Aortic and venous cannulation was done using single double stage venous cannula and cardiopulmonary bypass was initiated followed by systemic and topical cooling. Double stage venous cannula was used as due to our lack of previous exposure in this kind of case, repair of the aneurysm was planned from aortic side but intraoperatively need to assess the competency of mitral valve was felt, and therefore we proceeded to left atrial approach without changing the cannulation. After aortic cross clamp was applied, aortotomy was done and ostial cardioplegia was given to arrest the heart. The left atrium was opened and presence of a 2-cm aneurysmal sac arising from aortomitral intervalvular fibrosa extending up to and ruptured into left lateral wall of the left atrium through a

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Fig 1 2D echo view of aneurysm

rent of 0.5 cm was found (Fig. 2). The consistency of aneurysmal sac was fibrous. No particular shape and contents were noted as aneurysm was already ruptured. Redundant sac excised and remaining part of the sac was plicated and closed with dacron patch (Figs. 3 and 4). Mitral valve inspection was done using saline instillation and no regurgitation was found. Rewarming was started with inotropic support. After deairing, the patient was weaned off bypass. Protamine was given, hemostasis was achieved, and the chest was closed. Total bypass time during surgery was 118 min and aortic cross-clamp time was 49 min. The surgery was performed under moderate hypothermia and the minimum temperature during the surgery

Fig. 3 After repair of aneurysm

was 28 °C. Postoperative course of the patient was uneventful. Postoperative echocardiography images were not taken.

Histopathology report of the aneurysmal sac showed fibrocollagenous tissue with no signs of inflammatory activity. Culture of the excised tissue reported to be sterile. The patient was followed up in OPD until the last visit which was 9 months after the surgery and was doing well.

Fig. 2 Aneurysm as seen after opening left atrium

Fig. 4 Excised sac wall

Discussion

Aortomitral intervalvular fibrosa is the continuity between non-coronary cusp (NCC) of aortic valve and anterior mitral leaflet (AML) of mitral valve. Although it offers less chances of infection being a relatively avascular membranous structure [3, 4], it is susceptible to dilatation leading to pseudoaneurysm formation being thin and fragile [5]. Pseudoaneurysm in this structure is often a complication of infective endocarditis (IE) [1, 3, 6–8]. Rupture of this pseudoaneurysm is a surgical emergency. If ruptured, it can cause mitral regurgitation [1, 3, 8], and hemopericardium [6, 9], and due to compression of the left coronary artery, chest pain can occur [4, 7]. In our case, the patient had an unknown etiology as the patient had no history of previous cardiac surgery, infective endocarditis, or any connective tissue disorder. It was complicated by rupturing into the left atrium.

Trans-esophageal echocardiography (TEE) and other imaging modalities have led to early and accurate diagnosis. TEE assistance is a necessary tool intraoperatively for management of such cases. Additive imaging modality is beneficial for assessing the extent and planning for surgery [10, 11]. It was presented on echo as a pouch between subaortic region and AML. Color doppler shows to and fro pulsatile flow in pseudoaneurysm.

In cases without any complication often diagnosed incidentally, regular follow up with conservative management has been described as a modality of management [12].

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Research involving human participants and/or animals Not applicable.

Informed consent Written informed consent was obtained from the patient before submission of the manuscript for this case report.

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