Sudden Appearance of New Clot

Abstract
A patient having mitral stenosis with chronic atrial fibrillation, large left atrium, and spontaneous echo contrast is expected to have clot in LA or LAA. TEE is more sensitive to detect thrombus in LA and LAA than transthoracic echocardiography. However, false-negative results can still occur due to multilobed LAA, and a thrombus can be potentially missed.

Keywords: Atrial fibrillation, mitral stenosis, left atrial appendage

A 35-year-old female patient presented with palpitation and shortness of breath on mild exertion. She had a history of mitral annuloplasty surgery at the age of 5 years and had a chronic atrial fibrillation (AF). The present echocardiograpic evaluation revealed large left atrium (LA) and left atrial appendage (LAA) with spontaneous echo contrast (SEC) but no clot in LA. Mean gradient across mitral valve was 15 mmHg. The patient was scheduled for mitral valve replacement (MVR). After smooth anesthesia induction, sternotomy was performed followed by aortic and bicaval cannulation after heparinization, and cardiopulmonary bypass was established. Intraoperative transesophageal echocardiography (TEE) confirmed the preoperative findings. Despite large LAA and SEC, no obvious clot was noticed [Figure 1]. The surgeon confirmed the absence of any removable organized thrombus in the LA and performed MVR with a bileaflet mechanical mitral valve. After atrial closure, deairing maneuvers such as manual cardiac ballotttement and conventional aspiration of the aortic root vent and left ventricular vent inserted during the operation through the superior pulmonary vein were started with partial filling of the heart. During the process, a mobile echogenic structure suggestive of thrombus was seen in the LA on TEE [Figure 2]. The surgeon was informed about this new finding. LA was reopened after cardiopulmonary bypass without any further event.

A patient having mitral stenosis with chronic AF, large LA, and SEC is expected to have clot in LA or LAA. TEE is more sensitive to detect thrombus in LA and LAA than transthoracic echocardiography. However, false-negative results can still occur due to multilobed LAA, and a thrombus can be potentially missed.[1]

A very interesting case report by Kim et al. described the formation of intracardiac thrombus during cardiopulmonary bypass with full heparinization.[2] In the present case, LA exploration during surgery could not find any thrombotic clot, and the clot which was observed later was an old clot, not the freshly formed. This thrombotic mass was not attached to LA wall, and hence, it could be differentiated from inverted LAA, pectinate muscle, and trabeculations.

We hypothesize that pulmonary venous (PV) congestion in mitral stenosis patient could have formed the thrombus in pulmonary vein itself. Incidentally, this clot got migrated to LA during deairing phase. TEE can demonstrate thrombus in LA and larger distal pulmonary vein though not all thrombi can be visualized by TEE, and bidimensional images can be suboptimal sometimes. The measurement of pulmonary vein blood flow velocity can indirectly suggest the diagnosis.[3]

In lung transplant recipients, the mean PV blood flow velocity was observed as 123 ± 23 cm/s in patients with PV thrombosis (PVT) compared with
50 ± 10 cm/s in patients without PVT. However, peak systolic pulmonary blood flow velocity can be confounded by various factors such as left atrial pressure, mitral regurgitation, mitral inflow velocities, and the presence of impaired systolic and/or diastolic function.

Rheumatic mitral valve disease with large LA is commonly encountered in Indian population. A routine preoperative investigation such as echocardiography can hardly detect PVT. Contrast-enhanced computed tomography scan of the thorax can easily delineate the clot in the pulmonary vein. However, this is not commonly performed unless indicated for some other reasons. This case report provides the ground for future studies to detect the incidence of pulmonary vein thrombosis in patients with mitral valve disease.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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