Biatrial appendages clots in a rheumatic heart disease patient – an important lesson to remember

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ABSTRACT
Patients with Atrial fibrillation (AF) are quite prone to develop atrial clots due to stasis from impaired atrial contractile function. While left atrial (LA) and left atrial appendage (LAA) thrombi are quite common, right atrial (RA) and right atrial appendage (RAA) clots are uncommonly seen. Structural and functional differences between RAA and LAA have been implicated in lower prevalence of RAA clots in AF patients. We report here simultaneous LAA and RAA clots in a patient with Rheumatic heart disease, mitral stenosis and Atrial fibrillation. Though current guidelines do not make a specific mention of RAA assessment, we highlight the fact that a comprehensive echocardiographic evaluation of both atrial appendages is of paramount importance in atrial fibrillation patients especially those who are planned to undergo balloon mitral valvotomy or cardioversion.

Key words: Right atrial appendage, Left atrial appendage, atrial fibrillation, Mitral stenosis, clot.

CASE REPORT
A 39 years lady presented with 6 months history of NYHA class II fatigue and dyspnea. On clinical examination she had irregular pulse, loud and variable S1, loud P2 and a mid-diastolic murmur in mitral area. A 12 lead ECG revealed atrial fibrillation. Transthoracic echocardiogram showed severe mitral stenosis with valve area of 1.0 cm² and mild mitral regurgitation. The patient was planned for Balloon mitral valvotomy. Prior to the procedure, transesophageal echocardiogram (TEE) was done to rule out clots. TEE revealed dilated left atrium (LA) while left atrial appendage (LAA) had a 17 x 10mm clot (Figure 1A). LAA velocity was reduced (Figure 2). The Right atrial appendage (RAA) also had a clot measuring 18 x 12mm (Figure 1B). Patient had mild mitral regurgitation. In view of biatrial appendages clots, oral anticoagulation with warfarin was advised and balloon valvotomy was deferred.

DISCUSSION
Atrial thrombi are quite common in patients with atrial fibrillation due to impaired mechanical contraction of atrium. Although both atria are fibillating, the incidence of LAA thrombus (10%-15%) is reported much higher than RAA thrombus (2%-7%). In patients with Mitral stenosis, the effect of stasis due to mechanical obstruction adds to the thrombotic milieu due to poorly contracting atria, escalating the thrombotic risk manifold. The incidence of RAA clots in such patients may be as high as 25%. Simultaneous bi-atrial appendage clot formation has been reported in the settings of atrial fibrillation, heart failure in sinus rhythm and also in a patient with heparin induced thrombocytopenia. Several reasons have been implicated for the lower prevalence of RAA clots. A study by Subramaniam et al in 92 patients with TEE imaging showed that RAA had a wider neck compared to LAA but RAA area and LAA area were found to be similar. So the neck width/area ratio was higher for RAA than LAA (0.56 ± 0.15 vs 0.41 ± 0.14) (P <0.001). Interestingly there was lack of anatomic remodelling (dilatation) of RAA in patient with AF. In a study of 1042 patients by Cresti et al RAA thrombus was seen in only 7 patients while LAA clots were present in 91 patients. Three of these patients had both appendages clots. The risk of thrombus formation in LAA is correlated to several factors including LA size, LAA velocity, presence of spontaneous echo contrast, absence of mitral regurgitation. However the presence of spontaneous echo contrast was found to be the only independent predictor of RAA thrombus formation.

Due to uncommon occurrence of RA thrombus in AF patients, there is lack of guidelines or consensus opinion regarding RA imaging prior to procedures. The recent 2014 American Heart Association/American College of Cardiology guidelines for management of AF gives Class IIa recommendation for TEE evaluation of LA and LAA before cardioversion if AF > 48 hours duration. However there is no specific mention for RA or RAA evaluation.

Our patient presented with severe mitral stenosis and long standing AF and had simultaneous biatrial appendage clots. Such patients are at high risk of thromboembolism to systemic and pulmonary circulations. Transcatheter interventions like inter atrial septal puncture and balloon mitral valvotomy may result in catastrophes like pulmonary embolism, or cerebrovascular accident, peripheral limb ischemia, or embolism to mesenteric or coronary circulations. To avoid these embolic complications, TEE assessment should be done in all patients with atrial fibrillation as it provides optimal visualization of both atrial appendages. A comprehensive echocardiographic visualization of both atria and their appendages is of paramount importance in patients with atrial fibrillation who are planned for procedures like balloon mitral valvotomy.

Learning points from this case:
- Atrial fibrillation is a common arrhythmia in patients with Mitral stenosis and predisposes to thrombus formation and embolism especially in patients undergoing Balloon mitral valvotomy.
- RA appendage clots are less common than LA appendage clots in patients with AF.
- TEE provides optimal visualization of Left and Right atrial appendages.
A comprehensive TEE evaluation of LA appendage and RA appendage should be done in all patients with Atrial Fibrillation undergoing Balloon Mitral Valvotomy.

REFERENCES


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