

considered in medical management of mitral stenosis patients where b blockers are contra indicated such as reactive air way disease. The cost of ivabradin is higher than metoprolol which might pose constraints as most of rheumatic heart disease patients belongs to low socioeconomic status. Drawbacks of the study are small sample size and invasive parameters like PCWP which play major role in mitral stenosis has not been assessed in the trial. Longer follow-up study is needed to effectively comment on safety profile of ivabradin.

Evaluation of left atrial morphology by cardiac MRI in patients with post-percutaneous Ballon Mitral Valvotomy for rheumatic mitral stenosis



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Introduction: Percutaneous mitral balloon valvotomy has proved to be an effective method for the treatment of patients with mitral valve stenosis with favourable short and mid-term results. In view of the reduction of the left atrial pressure after successful percutaneous mitral balloon valvotomy, one would anticipate a lower incidence of atrial fibrillation (AF). However, in the past, several studies of the cardiac rhythm after surgery for mitral valve disease have shown that chronic AF persisted in the majority of patients despite successful mitral valve repair or replacement, probably because atrial electrical remodelling strongly contributes to persistence of AF. Information on the short- or long-term course of cardiac rhythm after percutaneous mitral balloon valvotomy remains very limited.

Long-term follow-up studies demonstrated that the development of AF markedly increased the risk of cardiovascular complications. Moreover it is generally accepted that AF concomitant with rheumatic valve disease exhibits a considerably higher relative risk of stroke than AF without valvular disease.

This study is designed to evaluation of atria by cardiac MRI in Post Ballon Mitral Valvotomy rheumatic mitral stenosis patients at tertiary care hospital.

Aims and objectives: Evaluation of left atrial morphology by cardiac MRI in Post percutaneous Ballon Mitral Valvotomy patients.

Materials & methods: This study was prospective having sample size of 10 and sampling method was random with inclusion criteria:

- Post BMV patients with rheumatic valvular disease.
- Hemodynamically stable patients.
- Patients between 12 and 40 yrs of age.

Exclusion criteria:

- Patients not consenting for the study.
- Patients with age <12 yrs.
- Patients with age >40 yrs.
- Patients with nonrheumatic valvular disease.
- Patient with any contraindications for MRI.
- Pregnancy (Risk vs benefit ratio to be assessed).
- Known h/o contrast allergy.

Method: Patients with rheumatic mitral valve stenosis who have undergone percutaneous Balloon Mitral Valve procedure and

satisfying inclusion and exclusion criteria will be included in the study. Patients who were in sinus rhythm preoperatively will be included in the control group while patients having atrial fibrillation preoperatively will be included in cases group.

All the patients will undergo Cardiac MRI to detect the atrial size and fibrosis. MRI will be done on Philips achieve series 3T imager. Patients with atrial fibrillation will be first given anticoagulation (if LA clot is present) followed by cardioversion (DC shock or amiodarone) and brought to sinus rhythm before doing MRI.

Results: Out of total 10 patients in our study 2 patients of atrial fibrillation had LA volume of >30 cm² on cardiac MRI and total 8 patients in sinus rhythm had LA volume of <30 cm². LA scar and subendocardial enhancement was found in total 6 out of 10 patients in our study. However those patients who had atrial fibrillation (n = 2) had not demonstrated any LA morphological abnormality.

Conclusion: LA volume rather than LA morphological abnormality is associated with atrial fibrillation in post-percutaneous mitral balloon valvotomy of rheumatic mitral stenosis. While atrial fibrillation patients with no LA morphological abnormality associated with more likely successful cardioversion and maintenance of sinus rhythm in our short term study.

A study of immediate and long-term results of significant tricuspid regurgitation after percutaneous mitral balloon valvotomy



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Background: Moderate and severe tricuspid regurgitation (TR) in patients with severe mitral stenosis may persist after successful percutaneous mitral balloon valvotomy (PMV). Its clinical importance has been well established because its persistence may contribute to a poor outcome after the procedure. This is a cohort study over a three-year period of cases seen at our centre. The records of patients with significant TR before successful PMV were reviewed in term of the resolution and its persistence immediately and long after the procedure. Clinical outcome were also analysed in relation to significant TR in terms of functional impairment, repeated PMV, mitral surgery and death. Factors associated with persistence of TR were also noted. Survival analysis was performed.

Methods and results: Seventy-nine patients were included in the study. They were divided into two groups, those with insignificant TR and those with significant TR immediately after successful PMV. Majority of the population were female with mean age of 33 ± 8 and 32 ± 9.5 respectively. Tricuspid regurgitation was resolved to trace or mild in 42 (53%) patients and persisted in 37 (47%). On 3 year follow-up TR became insignificant in 15 (41%) patients who initially had moderate to severe TR after PMV, while 22 (59%) continued to have significant TR. Twelve (29%) patients with initially had trace to mild TR after PMV developed significant TR. Patients with moderate to severe TR immediately and after PMV and those who developed significant TR on follow-up had elevated PAP, TVA and RV diameter on the last follow-up. Presence of organic TR was also significantly associated with patients having persistent significant TR. There was a marked reduction of symptoms in almost all of the patients after the procedure, and majority remained remarkably stable on follow-up. However patients with significant TR on follow-up had higher rates of functional impairment compared to those in whom TR resolved to trace or mild. The event free survival rates for trace to mild TR was 80% and 52% for those with moderate to severe TR.

Conclusion: Over all, there was significant improvement in severity of TR in a good number of patients on both short-term and long-term follow-up after successful PMV. More than two thirds of patients were also found to improve clinically with no note of any major cardiac events on 3 year of follow-up.

A hitherto study of relationship between left atrial volume and pressure in echocardiogram and length of left atrial branch of left circumflex artery in rheumatic heart disease



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Background and objective: To study whether there is a relationship between left atrial volume and pressure in echocardiogram and the length of left atrial branch of LCX in coronary angiogram in patients with RHD.

Materials and methods: In our observational study of 52 patients with rheumatic heart disease planned for valve replacement for whom preoperative coronary angiogram was done were observed over a period of 2 years from June 2013 to May 2015. Left atrial indexed volume was calculated by area biplane method and left atrial pressure was estimated by echocardiogram using the formula $IVRT/T(E-Ea)$. Length of atrial branch of LCX was measured in coronary angiogram.

Inclusion criteria: (1) age 40–60 years; (2) patients of rheumatic heart disease with moderate to severe lesion planned for valve replacement in sinus rhythm for whom perioperative CAG was done. **Exclusion criteria:** (1) Hypertension; (2) Coronary artery disease; (3) Atrial fibrillation.

Results: Totally 52 patients of rheumatic heart disease were studied of which 31 cases were females (60%) and 21 were males (40%). Mean age was 50 ± 10 years. The indexed LA volume was highest for mitral stenosis patients with a mean of 67.7, followed by patients with MS/MR of 50.7, and MR patients of 44.7, and then AS/AR of 33.08. The LA pressure/PCWP was categorized as $<or> 15$. Of these 21 patients (40%) had PCWP <15 and 31 patients (60%) had PCWP >15 of which maximum number of patients were those with MS/MR followed by those with MS. The Left atrial branch length ranged from 4.0 to 18.3 cm. On further analysis of the length it was found that 73% of MS patients had a length of >15 cm, 52% of patients with MS/MR had a length between 10 and 15 cm, 73% of MR patients had a length between 5 and 10 cm and 80% of AS/AR patients had a length <5 cm.

RHD patients	Indexed LA volume	Left atrial branch length
MS	67.7	>15 cm (73%)
MS/MR	50.7	10–15 cm (52%)
MR	44.7	5–10 cm (73%)
AS/AR	33.0	<5 cm (80%)

Conclusion: From the above analysis it is found that left atrial indexed volume was highest in patients with MS followed by patients with MS/MR, MR and AS/AR. Also the left atrial branch length seems to be higher in the same order. Thus there seems to be a direct relation between the Left atrial branch size and the left atrial volume. Also there seems to be a relation between left atrial pressure and left atrial branch size which however could not be

concluded and needs further studies with catheterization for quantification of left atrial pressure.

3 dimensional echocardiographic evaluation of prosthetic valve dysfunction



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Background: Echocardiography (Echo) with Doppler is method of choice for noninvasive evaluation of prosthetic valve function. Three-dimensional (3D) imaging and 3D transesophageal echocardiography (TEE) images enabled visualization of valvular anatomy from unique orientations with improved spatial relationships not previously seen with two-dimensional (2D) Echo. In particular, real-time three-dimensional (RT3D) TEE has allowed improved visualization and assessment of prosthetic valves.

Methods: Patient who fulfill the criteria will undergo detailed evaluation of prosthetic valve dysfunction. All patients having prosthetic valve dysfunction with stable hemodynamic are included and 3D Echo findings are compared with 2D Echo.

Results: 10 males (28.6%) and 25 females (71.4%) are evaluated in study. Out of 25 female patients, 2 had bioprosthetic mitral valve. Out of 10 male patients, 1 bioprosthetic mitral valve. Out of 35, 5 patients (3 male and 2 female) had tilting disc mechanical prosthetic valve. 21 Female and 06 Male had bileaflet mechanical prosthetic valve. Motion of leaflets was seen abnormal in 7 (70%) male patients and 21 (84%) female patients by 3D Echo compared to 2D Echo. 3D Echo was shown abnormal motion of leaflets in 6 female and 1 male patients which was not seen on 2D Echo. Abnormal valvular calcification was demonstrated in 7 (70%) male patients and 16 (64%) female patients on 3D Echo. While on 2D Echo only 3 (30%) male and 6 (24%) female patients were found to have abnormal valvular calcification. Valve sewing ring integrity and motion was found abnormal in 2 (20%) male and 2 (8%) female patients on 3D Echo which was not visualized on 2D Echo. Prosthetic valve dehiscence was better seen in 1 (10%) male patient and 4 (16%) female patients by 3D Echo as compared to 2D Echo. On 3D Echo, thrombus was seen in 4 male patients and 11 female patients which was not seen on 2D Echo. On 3D Echo, pannus was better seen in 1 (10%) male patients and 2 (8%) female patients which was not better visualized on 2D Echo. Pseudo aneurysm was not seen in any case. Vegetation was seen in 2 (8%) female patients by both 2D and 3D Echo. 3D Echo defined exact site and size of vegetation better than 2D Echo.

Conclusion: In the assessment of prosthetic valves, especially mechanical valves, RT3D imaging allows improved visualization over 2D techniques.

Youngest reported case of juvenile mitral stenosis



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Mitral stenosis (MS) is a condition characterised by structural abnormality of the mitral valve apparatus that results in obstruction to left ventricular inflow. Isolated severe rheumatic mitral