valvular lesions and those with echocardiographic evidence of valvular lesions.

**Results:** Carditis was diagnosed clinically in 56% whereas 2D Echo Doppler done in all patients with suspicion of RF, RHD increased the sensitivity of detection of RF/Carditis to 90.6%. Also the specificity and positive predictive value of 2D Echo Doppler was 100%. In our study clinically only 25.5% patients were diagnosed to have different types of valvular lesions by auscultation and ECG against which 48% patients were diagnosed and proved by echocardiography to have RF & RHD.

**Conclusion:** Echocardiography increases yield of RF & RHD in patients with acute rheumatic fever (p value<.0138) and is also helpful in mixed valve lesions to determine severity of each lesion. Subclinical cases of RF can be picked up with Echo Doppler so that timely treatment and prevention can reduce morbidity and mortality.

### Predictive value of D-dimer levels and tissue Doppler mitral annular systolic velocity for detection of left atrial appendage thrombus in patients with mitral stenosis

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**Background:** Left atrial appendage (LAA) thrombus is one of the causative factor for thromboembolic events in patient with mitral stenosis (MS). Several biochemical and echocardiographic parameters have been suggested to predict the presence of LAA thrombus in these patients.

**Aims:** 1) To assess the predictive value of mitral annular systolic velocity (S-wave) and D-dimer for the detection of LAA thrombus in patients with MS in sinus rhythm (SR). 2) To correlate D-dimer levels with LAA spontaneous echo contrast (SEC) and LAA thrombus.

**Methods:** Total 59 patients with symptomatic MS in SR were evaluated by transthoracic and transesophageal echocardiography and divided into 2 groups. Patients with LAA thrombus (n=7) and without LAA thrombus (n=52). Plasma concentrations of the D-dimer were measured with Roche Cardiac reader in both the groups.

**Results:** Patient with LA/LAA thrombus had higher rates of heart failure than those without thrombus (28.57%, p<0.01). Thrombus group had significantly lower mitral annular systolic velocity (7.42±1.1 cm/s, Vs10.78±1.3, p<0.001) and higher D-dimer levels (824±258 vs 270±94, p<0.001) than those without thrombus. The LAA late emptying velocity (Lev) showed significant positive correlation with S-wave (r=0.54, p<0.0001) and moderate to severe SEC (r=0.44, p<0.001) and a significant negative correlation with the D-dimer levels (r=−0.45, P<0.0004). Multivariate analysis revealed that D-dimer, LAA Lev, S-wave velocity were independent predictors of LAA thrombi. ROC analysis yielded an optimal D-dimer cutoff value of 400 μg/L for prediction of LAA thrombi with sensitivity of 87.5%, specificity of 94%, positive predictive value of 83% and negative predictive value of 95% while S wave of 8 cm/s predicted LAA thrombus with sensitivity of 84.6%, specificity of 71.4%, and positive predictive value of 50% and negative predictive value of 93.3%.

**Conclusions:** D-dimer and S wave velocity are independent predictors of LAA thrombus in MS patients with SR. Both have higher negative predictive values.

### N-Terminal-proBNP [NT-proBNP], a surrogate biomarker of combined clinical and hemodynamic outcomes following PTMC

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**Background:** Natriuretic peptides (NP) have been evaluated in the setting of valvular heart diseases. This present study is designed to examine the relationship between plasma levels of NT-proBNP and various echocardiographic, hemodynamic parameters in patients with MS undergoing PTMC.

**Methods:** The study population consisted of 100 patients with rheumatic MS who underwent PTMC between June 2012 and November 2013. 2 ml of blood sample was collected by venipuncture into heparinised tubes 30 min before and 48 h after PTMC.

**Results:** Most of the study population were females. The male to female ratio was 19:81. Mean age of the study population was 37.5 + 11 years ranging between 13 – 63 years. On correlation with various echocardiographic parameters, it was observed that log NT-proBNP correlated significantly with LA volume (r=0.38; p<0.01) and LAVI (r=0.45; p<0.01). On correlation with various hemodynamic parameters, it was observed that log NT-proBNP showed significant correlation with systolic PA pressures (r=−0.42; p<0.01) and mean PA pressures (r=−0.41; p<0.01).

Ninety two patients underwent successful PTMC. Four patients developed moderate-severe mitral regurgitation (MR) and four others developed AF (lasting >24 hours) following PTMC. NT-proBNP levels decreased significantly following PTMC (p<0.01). A significant decrease in NT-proBNP levels was observed both in patients with AF (p<0.05) and also in those with SR (p<0.01) (Table 6).

**Conclusions:** This present study demonstrated that NT-proBNP levels were significantly elevated in patients with severe MS. NT-proBNP levels decreased significantly following PTMC along with improvement in various echocardiographic and hemodynamic parameters. Decrease in NT-proBNP levels following PTMC correlated with decrease in LA volume, LAVI, systolic PA pressures and mean PA pressures.

### Calculation of Time in Therapeutic Range (TTR) in valve clinic follow up patients with mechanical heart valve replacement

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**Background:** High quality lifelong oral anticoagulation (LOAC) therapy after valve replacement using a mechanical valve is necessary for prevention of thromboembolism and hemorrhagic complications. One quality measure of anticoagulation management is analyzing individual time in therapeutic range (TTR), but still there are no studies about optimal TTR value in mechanical heart valve patients. This study was selected to analyze role of TTR in LOAC therapy receiving mechanical heart valve patients.

**Aims:** To calculate and to correlate TTR with a) prosthetic valve thrombosis (PVT), b) cerebral embolism (CE), total embolic events (TEE), c) major-moderate bleeding events (MBE), total bleeding events (TBE) in patients with mechanical prosthetic valves.
Methods: In this prospective observational study prospectively observed events were only included. The Rosendaal linear interpolation methodology was used for calculation of TTR. Based on individual TTR all patients were categorized into 4 quartiles, 1st quartile (<51%), 2nd quartile (51-58.15%), 3rd quartile (58.15-66.55%), highest quartile (>66.55%) all events distribution was compared with quartiles.

Results: Total of 256 patients were followed for 461 pt years. Patients in 1st quartile had significantly higher risk of PVT (OR-22.78, P=0.0028), TEE (OR-9, P=0.041), and TBE (OR-26, P=0.0017) than highest quartile, whereas no significant difference for CE, MBE between 1st quartile and highest quartile. Patients in 2nd quartile had significantly higher risk for only TBE (OR-9, p<0.041) than highest quartile. PVT, TEE, TBE risk is significantly higher in lowest quartiles (<51%) whereas only risk of TBE is higher in 2nd quartile. There is no significant difference between 3rd and 4th quartiles for any event.

Conclusion: In patients with mechanical valve on LOAC therapy, risk of events like PVT, TEE, TBE, correlates with low TTR (<51%), whereas only TBE correlates with low TTR <58.15% thus optimal TTR for them is ABOVE 58%. Thus TTR can be used to predict risk of events like PVT, TEE, TBE in mechanical heart valve patients.

Tricuspid and pulmonary valve involvement in rheumatic heart disease

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Background: Right-sided valve abnormalities are less common than their left-sided counterparts. Furthermore, whilst organic rheumatic involvement of the tricuspid valve is not uncommon, it receives less attention than left-sided heart valves & frequently missed on routine clinical examination. Our aim was to study the prevalence of tricuspid and pulmonary valve involvement in rheumatic heart disease.

Methods: We prospectively studied 713 patients of rheumatic valvular heart disease from January 2011 to June 2014. Tricuspid and pulmonary valve was examined echocardiographically for stenosis and regurgitation. The severity was graded according to ASE guidelines.

Results: Among 713 patients of rheumatic heart disease studied, mitral valve involvement was seen in 77% patients, aortic valve involvement in 56% patients while both mitral and aortic involvement was seen in 49% of patients. Among these patients, 122 (17.11%) had organic tricuspid valve disease. In this 71 (58.19%) were females and 51 (41.8%) were males. Out of these total 122 patients, 78 (63.93%) had isolated tricuspid regurgitation, 44 (36.06%) had tricuspid stenosis with or without tricuspid regurgitation. 6 (4.91%) patients had isolated tricuspid valve stenosis. Functional tricuspid regurgitation was found in 406 (56.94%) patients. From total number of patients with organic TR, 19 (15.57%) had mild, 68 (55.73%) had moderate and 35 (28.68%) had severe tricuspid regurgitation. There was no single patient with organic pulmonary valve involvement.

Conclusions: We conclude that rheumatic tricuspid valve disease is not uncommon among patients with rheumatic heart disease, but attracts less attention and might, therefore, be overlooked. Echocardiography is the most common diagnostic tool and is must for further management. Pulmonary valve involvement is very rare. Appropriate treatment of the tricuspid valve disease, even when secondary to left heart diseases, may improve long term outcome.

Treatment and outcome of obstructive thrombosed prosthetic heart valves from a tertiary care hospital

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Background: Obstructive thrombosed prosthetic heart valve (OPTHV) is a serious complication of mechanical heart valve replacement. There are no generally accepted criteria for management of these patients with obstructed prosthetic valves. In the present study, we aimed to study the 30 day outcome of patients who presented with obstructed prosthetic mechanical heart valves to a tertiary care hospital.

Methods: A total of 22 consecutive patients presenting with 27 instances of PHVT were included in the study between 2013 and 2014. The diagnosis of PHVT was established mainly by echocardiography by increased mean gradients across the prosthetic valve. The fibrinolytic agents used were streptokinase (STK) in 16 PHVT episodes and urokinase (UK) in 2 cases. 8 cases were directly referred to redo valve replacement surgery and 4 cases were referred to surgery after failed fibrinolytic therapy. One patient had 4 episodes of PHVT and shown improvement with fibrinolysis each time, and two patients had 2 episodes of PHVT. The efficacy of Fibrinolytic therapy or surgery was assessed from hemodynamic parameters derived from echocardiographic examinations as well as on clinical grounds and 30 day outcomes were analyzed.

Results: Among the 22 cases of PHVT 18 cases were involving the mitral valves only 4 cases were aortic mechanical prosthetic heart valves. Death occurred in 6 cases of 18 cases (33%) who were treated with fibrinolytic therapy with in 1 week of admission to the hospital and 4 PHVT episodes has shown only partial improvement and they were referred to the surgery. Death occurred in 3 cases of 12 cases (25%) who underwent redo prosthetic valve replacement. There were 4 documented embolic episodes occurred in the fibrinolytic group. No hemorrhagic episodes were documented.

Conclusions: These results indicate that redo surgical prosthetic valve replacement has a reduced mortality and complications rate in comparison to fibrinolytic therapy in patients with obstructed prosthetic heart valves.

Prevalence of coronary artery disease in patients with rheumatic and non-rheumatic valvular heart disease treated at Asian heart hospital, Mumbai

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Background: Although coronary artery disease (CAD) is the most common cause cardiovascular mortality worldwide but rheumatic heart disease (RHD) still continues to be one of the major CV