INTRODUCTION
Valvular lesions due to Rheumatic Heart Disease are an alarming dilemma in our population which is increasing day by day and causes a huge economical burden in the medical budget. There must be some indicator which may predict the expected cost of the surgical treatment of a given procedure. Left atrial size reflects the chronicity and magnitude of increased left ventricular filling pressures and is also a one of the most simple and accurate predictor of the cost effectiveness of the given surgical procedure (valve repair/replacement) and gives accurate clues towards the expected morbidity and mortality postoperatively.

Most patients with chronic valvular disease are sicker, may have poor cardiac reserves, enlarged heart chambers, clots in LA, previous H/O stroke, low cardiac output syndrome, chronic Atrial fibrillation and cardiac cachexia. An increase in left atrial size is a known risk factor for atrial fibrillation, flutter, stroke, clots in LA, and has been generally related to cardiovascular risk of death. Left atrial size is also known as a marker of left ventricular diastolic dysfunction even in those patients who do not have significant mitral valve disease or heart failure. In this scenario the decision in their management plan is very crucial and must be safe and cost effective.

METHODS
All the patients operated upon from March, 2010 to April, 2014 at Faisalabad Institute of Cardiology, for their valvular lesions were included in the study with the pre-operative Echocardiography reports measuring their LA size especially.

Exclusion criteria
Valvular patients with previous H/o strokes, valvular patients with other congenital defects,
valvular patients with associated IHD and valvular patients complicated with other non cardiac complications like respiratory tract infection, urinary tract infections, bleeding disorders, RTA and psychological trauma etc.

RESULT

The Demographic data of the patients was summarized in table-I.

<table>
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<tr>
<th>Characteristics</th>
<th>All Patients</th>
<th>LA Below 60 mm²</th>
<th>LA Between 60-65 mm²</th>
<th>LA Above 65 mm²</th>
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<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Male</td>
<td>208</td>
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<td>62</td>
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<tr>
<td>Female</td>
<td>342</td>
<td>98</td>
<td>114</td>
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<td>Age in years</td>
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<tr>
<td>Mean (SD)</td>
<td>38</td>
<td>26</td>
<td>29</td>
<td>35</td>
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<tr>
<td>H/o AF</td>
<td>281</td>
<td>02</td>
<td>67</td>
<td>212</td>
</tr>
<tr>
<td>Clot in LA</td>
<td>16</td>
<td>NIL</td>
<td>03</td>
<td>13</td>
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<td>Cardiac cachexia</td>
<td>22</td>
<td>NIL</td>
<td>06</td>
<td>16</td>
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Table-I. Base line characteristics of the study patients.

On analysis of the above data, it is quite clear that the size if left atrium can accurately predict the post operative course of the patient and thus its cost-effective value in the surgical procedures is highlighted.

If LA size is less than 60 mm², the chances of complication in ICU are very low and means ICU stay is 1-2 days. If LA size is between 60-65 mm², patients’ behavior is borderline and they may have some short course of minor complications in ICU like short episodes of atrial fibrillation, low cardiac output syndrome, mild renal dysfunction, or some minor respiratory complications.

If LA size is more then 65 mm², the post operative course may be different altogether and the chances of complications are higher. Their stay in ICU is therefore prolonged. He may need higher doses of inotropic support for prolonged period of time and may also need some treatment of various other complications in ICU and so their ICU stay and cost of surgical treatment is raised.

DISCUSSION

Left Atrial Size has been shown to be of a significant predictive and prognostic value of the cardiovascular outcome after valvular operations in many recent studies conducted all over the world\(^1\)\(^-\)\(^2\). Although left atrium has only a minimal active contribution towards Left Ventricular Filling (only 20%), rest of its role is only passive.

\(\alpha\). It acts as a reservoir of blood coming from pulmonary veins.

\(\beta\). It works as a conduit towards Left Ventricle.

But the size of left atrium contributes much towards its predictive role in post surgical course of the patients in ICU and early phases of patients, recovery in the hospitals and thus describes the cost effectiveness of the surgical procedures\(^3\)\(^-\)\(^4\). Size of the left atrium also reflects at least to some extent the chronicity and the magnitude of the disease and thus can also be a marker of left ventricular diastolic dysfunction, increased left ventricular filling pressures and increased risk of cardiovascular deaths in cardiac patients\(^2\)\(^-\)\(^4\).

Bangalore et al. studied 2,705 patients to see the role of left atrial size if it is any, in the cardiovascular risk stratification assessment programs and its role in early post operative days and found that patients with increased left atrial size were older and had a greater number of cardiovascular risk factors, like congested cardiac failure(CCF), valvular heart diseases, hypertension, low mean BMI or morbid obesity, prior myocardial infarction and H/O prior cardiovascular interventions\(^2\)\(^-\)\(^3\). They also found that patients with dilated left atrium achieved a lower peak heart rate and lower peak systolic blood pressure values than patients with normal left atrial size during stress
echocardiography. They also noted that patients with dilated left atrium had a lower left ventricular ejection fractions (LVEF%), higher rest and stress wall motions score indices, a greater number of ischemic segments in the walls of heart thus causing severe segmental wall motion abnormalities on echocardiography and greater severity of ischemia compared with patients having normal left atrial size3-4.

Benjamin et al. found in 3,581 patients in the Framingham cohort that the relative risk of death was 1.3 in men and 1.4 in women for every 10-mm increase in the size of left atrium. In this study, the increase in left atrial size was also associated with higher risk of cardiovascular events or even cardiac deaths suggesting that the dilated left atrium can be a marker of severe cardiovascular co-morbidities in its individual and independent capacity3,4. Similarly, Kjaergaard et al. found that left atrial size was a predictor of low exercise capacity together with mean body mass index, resting heart rate, and left ventricular end-systolic diameter and found that the patients with dilated left atrium were less likely to exercise and more likely to be chronotropically and ionotropically incompetent as compared to patients having normal left atrial size5-8.

So, size of the left atrium was found to be a significant predictor of cardiovascular events in both pre operative and post operative patients affecting the early post operative course in ICU even after controlling their baseline variables. It is further noted that for every 10 mm/m\(^2\) increase in the size of left atrium, the risk of cardiovascular events including cardiac deaths can increase up to even 3.15 fold. So when the left atrial size is taken as a cutoff value of 2.4mm/m\(^2\), it effectively risk-stratifies the patients into normal and abnormal groups3,5-8. The rate of cardiovascular events was 2.9 times higher in patients with dilated left atrium than patients having normal left atrial size. Thus it is very easily concluded that the size of the left atrium can significantly predict the future behavior of the patients in their early post operative recovery in the ICU and the expected cardiovascular events, on the basis of which cost effectiveness of the surgical treatment can be assessed11-12.

Although our study is done in a small center and number of patients included in our study were less than various other studies in the world but the results are consistent with the other studies that have shown an incremental increase in risk of cardiovascular events as the size of left atrium increases.

CONCLUSIONS

Like various other authors in the world, we also conclude that the size of the left atrium provides independent and incremental prognostic value independent of various other traditional risk factors and that the size of left atrium should be routinely incorporated in the prognostic interpretation of the patients pre operatively and post operatively and thus the cost effectiveness of the procedure made. More studies are needed to further elaborate the role of left atrial size in its risk stratification, its prognostic value in pre operative and post operative patients and its role in predicting cost effectiveness of the surgical procedures in post surgical patients.

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REFERENCES


"Failure is the key to success; each mistake teaches us something."

Morihei Ueshiba

<table>
<thead>
<tr>
<th>Sr. #</th>
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<th>Author's Signature</th>
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<td>2</td>
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