



Mitral Leaflet Separation Index as a Simple Parameter to Determine Mitral Stenosis Severity in Adam Malik Hospital

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Abstract : Background: Occurrence rate of mitral stenosis (MS) in developing countries remain high. Determining the severity of MS is important for both prognostic and therapeutic reasons. Transthoracic echocardiography (TTE) is the gold standard method for assessment of MS severity by using planimetry and pressure half time (PHT) methods. Planimetry is accurate but highly operator dependent. PHT is affected by hemodynamic significance, like aortic regurgitation (AR) and bradycardia or tachycardia.

Patients and Methods: This study included 102 patients with MS who had undergone echocardiographic examination from June 2016 to December 2017 at Adam Malik General hospital. The maximal separation of the mitral valve leaflet tips was measured from inner edge to inner edge in end diastole in the parasternal long axis and apical 4-chamber views. These two parameters were averaged to yield the MLSI. The index was compared with mitral valve area determined by planimetry method.

Results: Of the 102 study subjects, 14 patients had mild MS (13,7%), 14 patients had moderate MS (13,7%), and 74 patients had severe MS (72,6%). There was a very strong correlation between MLSI with mitral valve area by planimetry using Pearson correlation ($r = 0.888$; $p < 0.001$) and there was a very strong correlation between MLSI with mitral valve area by PHT ($r = 0,813$; $p < 0.001$) . Using receiver operating characteristic (ROC) curve, MLSI less than 0.77 cm can predict severe MS with 93.2% sensitivity, 89.3% specificity, 95.8% of positive predictive value (PPV), 83.3% of negative predictive value (NPV), and positive likelihood ratio (LR+) of 8.71. On the other hand, using ROC curve, MLSI 0.91 cm or more can predict mild MS with 100% sensitivity, 97,7% specificity, 91.67% PPV, 96.67% NPV, LR+ of 43.478. MLSI was still have a very strong correlation with mitral valve area, even in the presence of mitral regurgitation, AR, or atrial fibrillation. Intraobserver and interobserver variabilities showed by Kappa value had a high concordant measurement.

Conclusions: The MLSI is an easy, accurate and reliable measure to estimate severity of MS, it provides a quick estimate of MS severity from standard 2D echocardiographic views without having to resort to tedious measurements.

Key Words: Mitral leaflet separation index and MS severity.

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