The Diagnostic And Prognostic Value Of Mitral Annular Plane Systolic Excursion (MAPSE) As An Echocardiographic Indicator Of Myocardial dysfunction In Sepsis And Septic Shock

Thesis
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Summary

Septic shock is the most severe form of sepsis and is one of the most significant causes of death among critically ill patients. Sepsis-induced myocardial dysfunction SIMD is one of the major predictors of morbidity and mortality in sepsis; characterized with left ventricular dilation, depressed ejection fraction, and recovery within 10–7 days.

Mitral annular plane systolic excursion MAPSE has been proposed as useful echocardiographic parameter for the assessment of LV longitudinal function and correlates with global systolic function of the LV; being the earliest marker of myocardial injury and dysfunction and easily obtained even for the untrained observer and in patients with poor acoustic windows.

MAPSE value is thought to be an independent tool for LV systolic function assessment generally, as well as myocardial injury in patients with sepsis induced myocardial dysfunction, and also a predictor of mortality in patients with severe sepsis and septic shock.

To test this, MAPSE, LVEF, and SOFA score were measured in 50 septic shock patients (of whom 28 were survivors and 22 were non-survivors).

It was found that there was statistically significant negative correlation between SOFA scores levels (mortality predictor) with MAPSE values among Group I survived patients (average; r – 0.95 with p-value <0.001), and the same results were shown among Group II non-survivor patients (average; r – 0.85 & 0.84 with p-value <0.001), with high percentage of non-survivor group had MAPSE < 9 mm, on the other hand high percentage of survivor group had MAPSE ≥ 9 mm. and regarding ROC curves for mortality prediction; MAPSE was (95.5% sensitivity, 67.9% specificity, and 92% accuracy for cut-off value of ≤ 8.8 mm).

Also, it was found that there wasstatistically significant positive correlation with p-value <0.05 between MAPSE with LVEF and TDI S' values (LV systolic function parameters) among survivor and non-

survivor groups, with high percentage of LVEF value ≤ 50% had MAPSE < 9 mm, on the other hand high percentage of LVEF value >50% had MAPSE ≥ 9 mm. And regarding ROC curve for prediction of LVEF of value ≤ 50%; MAPSE measurement was (98.1% sensitivity, 90.9% specificity, and 96.4% accuracy for cut-off value of ≤ 9 mm).

From the above data, MAPSE is thought to be an independent predictor of LV systolic function in patients with sepsis induced myocardial dysfunction, and independent predictor of mortality in patients with septic shock. Furthermore, the goal of this study is to define a simple echocardiographic method that can be used (even by inexperienced observers) for a quick estimation of global EF, not to replace other more advanced/sophisticated techniques.