Title: INVESTIGATION FOR THE PROGNOSTIC VALUE OF ECHOCARDIOGRAPHIC INDICES AND PROPOSING A RELIABLE CUT-OFF FOR E/EM (E, PEAK EARLY TRANS- MITRAL VELOCITY; EM, EARLY DIASTOLIC MITRAL ANNULAR VELOCITY) AS AN INDEPENDENT PROGNOSTIC FACTOR

Category: Heart Failure and Cardiomyopathies

Abstract

Background: Although around 50% of heart failure cases are heart failure with preserved ejection fraction (HFpEF), tissue Doppler imaging (TDI) indices are not well studied and they lack a reliable prognostic cut-off. The aim of our study was to evaluate the prognostic value of TDI factors and propose a reliable cut-off for E/Em (E, peak early trans-mitral filling velocity; Em, early diastolic mitral annular velocity) as a prognostic TDI index.

Method: By purposive sampling, 100 HFpEF patients, according to Framingham criteria and ejection fraction (EF) >45%, pro-B type Natriuretic Peptide>500pg/ml, and diastolic dysfunction were included in our longitudinal study. Patients suffered from atrial fibrillation, myocardial infarction, valvular disorders, congenital heart disease, EF<45%, previous lung, liver, and kidney disease were excluded from the study. At admission, all patients underwent trans-esophageal TDI. TDI parameters including E/ EM, DT (deceleration time), E/A (A, late trans-mitral filling velocity), LVEDD (left ventricular end-diastolic time) and LAVI (left atrium volume index) were measured. Also, underlying diseases, including Diabetes mellitus, hypertension, smoking, dyslipidemia, and coronary artery disease were taken into consideration. After a 6 month follow-up (From February 2015 to July 2015), in order to evaluate prognosis, the patients were classified into two groups (with or without morbidity). Morbidity was defined as rehospitalization, need for inotrope, and cardiorenal syndrome occurrence. For data analyses, we used SPSS 16.0. Regression test, Chi-square, and student t-test were performed. We also designed ROC curve to show the specificity and sensitivity. The best cut-off for parameters were measured by Youden index.

Result: At the end of the study, 24 cases showed morbidity. None of the patients died during our study period. Higher mean values of E/Em and E/A correlate with a higher incidence of morbidity (all parameters, p<0.001). Also lower mean values of DT associate with morbidity (p<0.001). There was not any prognostic value for LVEDD, LAVI, and underlying diseases (all parameters, p>0.05). Regression test presented E/ Em and DT as independent factors in HFpEF prognosis. At the cut-off of 13.5, E/Em was 97.1% sensitive and 55.3% specific.

Conclusion: At the cut-off of 13.5, we found E/Em as a sensitive, specific, and independent prognostic parameter for HFpEF. Also, we found DT as an independent prognostic TDI index.