Abstract: P3553

**Right ventricular echocardiographic composite parameters in predicting major adverse cardiac events in patients with heart failure with reduced ejection fraction**

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**Topic(s):**
Chronic Heart Failure – Diagnostic Methods: Imaging

**Citation:**
Background: Echocardiography assessment of right ventricle still play an indispensable role in diagnosis, decision-making for further therapy and risk assessment of patients with heart failure with reduced ejection fraction (HFrEF).

Aims: Our objective was to compare the predictive value of five composite echo parameters of right ventricle (RV) in decompensated patients with HFrEF.

Methods and results: A total of 191 NYHA III-IV patients admitted for decompensation of advanced HFrEF (EF=25.53±6.87%) were prospectively enrolled. During the follow-up period mean period of 340 ± 84 days, 111 (58.1%) patients met the primary composite endpoint (MACE) of cardiac death, rehospitalization due to repeated decompensation, malignant rhythm disorders, heart attack or stroke. The average time of MACE occurrence was 110.5 ± 98.7 days. Among group of patients with MACE, during the follow-up, there were 34 (30.6%) cardiac related deaths. Re-hospitalization due to cardiovascular causes had 77 patients (69.4%). The study was performed at our hospital between June 2016 and January 2018. Patients were assessed for the following combined echo parameters: (i) relationship of right and left ventricle basal diameter (RVb/LVb x0.1); (ii) relationship of tricuspid annular plane systolic excursion and right ventricle systolic pressure (TAPSE/RVSP mm/mmHg); (iii) relationship of tricuspid annular systolic velocity and right ventricle systolic pressure (TAs’x100/ RVSP cm/s/mmHg); (iv) product of tricuspid annular systolic velocity and pulmonic valve acceleration time (TAs’x PVAcT cm/s2 x 1000); (v) product of systolic and diastolic velocity of tricuspid annulus (TAs’xTAe’). The last three parameters were result of this study and were not mentioned in earlier researches. In this study, univariat analysis of combined RV echo parameters, TAPSE/RVSP, TAs’x100/RVSP as well as TAs’xPVAcT have been shown to be highly significant predictors of MACE, p = 0.001. The TAs’xTAe’ product has been also distinguished as a significant predictor of MACE, p = 0.04, as well as the ratio RVb/LVb x 0.1, p = 0.007. Multivariate analysis of these five combined RV echo parameters shows that significant independent predictor of MACE turned out to be TAs’x100/RVSP (p <0.001, HR = 0.668 (0.531-0.840)). Obtained by reconstruction of the ROC curve (Area = 0.70 (95% CI 0.59-0.75); p <0.001, we have got cut off value of TAs’x100/RVSP = 1.92 (cm/s/mmHg). Kaplan-Meier curves were constructed by comparing the time to the occurrence of MACE. Patients with TAs’x100/RVSP =1.92 (cm/s/mmHg) have a significantly worse prognosis (Log Rank p <0.001).

Conclusion: New variable TAs’x100/RVSP, derived from this research, proved to be the most powerful combined RV echo parameter, independent predictor of one year MACE, with a better predictive value compared to the already described combined parameters in the literature.