Abstract: P6339

Sequential organ failure assessment score on admission predicts long-time mortality of the patients with acute heart failure

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Topic(s):
Chronic Heart Failure – Epidemiology, Prognosis, Outcome

Citation:
Background: Despite the remarkable advances in the treatment options of acute heart failure (HF), prognosis assessment remains an ongoing challenge. Previous studies revealed only a moderate accuracy of models predicting mortality. Sequential Organ Failure Assessment (SOFA) Score are widely used in the intensive care unit (ICU) to predict outcome and predicted higher long-time mortality in unselected patients in cardiac ICU. In addition, the American Heart Association Get With the Guidelines–Heart Failure (GWTG-HF) risk score allows for risk stratification of 30-day outcome for patients hospitalized with HF. The purpose of this study was to evaluate whether SOFA score on admission is useful for long-time mortality prediction in acute HF patients and also to assess the discriminative performance as compared with GWTG-HF risk score.

Methods: This was a single-centre, retrospective cohort study. Between January 2007 and December 2016, we screened eligible 661 consecutive patients with acute HF administered at our hospital. SOFA score on admission of 294 patients was able to calculate retrospectively. We enrolled 269 patients who could complete follow up evaluation for more than 1 year. Endpoint was all-cause mortality after admission. Additive information of SOFA score was evaluated by area under the curve (AUC), net reclassification improvement (NRI), integrated discrimination improvement (IDI) and decision curve analysis (DCA).

Results: The 269 patients were included in this study (78.5±10.9 years; 136 men; left ventricular ejection fraction [EF], 49.8±16.6%) during a mean follow-up of 32.1±22.3 months. Patients with all-cause death had higher SOFA score (4.2±2.3 versus 2.8±1.8, p<0.001; AUC, 0.689) and GWTG-HF risk score (44.0±7.6 versus 38.1±7.9, P<0.001, AUC, 0.692).

Kaplan-Meier survival analysis demonstrated higher SOFA scores (P<0.001) and GWTG-HF risk scores (P<0.001) appears to be related to increase probabilities of all cause death. A multivariate Cox proportional hazard model were made with adjustment for SOFA score, GWTG-HF risk score, age, gender and ejection fraction. As a result, SOFA score (hazard ratio [HR] 1.227; 95% confidence interval [CI], 1.130 to 1.326; P<0.001), GWTG-HF (HR, 1.054; 95% CI, 1.029 to 1.078; P<0.001) and age (HR, 1.069; 95% CI 1.048 to 1.092; P<0.001) were independent predictors of all cause death and HR of SOFA score was the highest in these parameters. Incorporating SOFA score into GWTG-HF score yielded a significant NRI (0.528 (95% CI 0.291 to 0.765) and IDI (0.046 (95% CI 0.020 to 0.072). In DCA, compared with the reference model, the net benefit for SOFA score model was greater across the range of threshold probabilities.

Conclusions: The SOFA score, simple and validated mortality risk score can predict long-term all-cause mortality in patients with acute HF. Discriminative performance metrics such as NRI, IDI and DCA were improved on incorporation of the SOFA score for prediction of mortality.