Importance of hospital and clinical factors in predicting of 30-day mortality in Takotsubo syndrome: data from the Swedish Coronary Angiography and Angioplasty Registry

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Background: Takotsubo syndrome (TS) is an acute heart failure condition that presents with symptoms similar to acute myocardial infarction. TS is often triggered by emotional or physical stress and is an important cause of morbidity and mortality but predictors of mortality in TS patients are not well understood. There is a need to identify high-risk patients and tailor treatment accordingly.

Purpose: The purpose of this study was to assess the importance of various clinical factors in predicting 30-day mortality in TS patients using a machine-learning algorithm capable of identifying complex relationships between variables.

Methods: We analyzed data from the nationwide Swedish Coronary Angiography and Angioplasty Registry for all TS patients between 2015-2022. Gradient boosting was used to assess the relative importance of variables in predicting 30-day mortality in TS patients.

Results: Of the 3,180 hospitalized TS patients, 76% were women. The average age was 68.3 ± 11.2 years. The crude all-cause mortality rate was 2.57% at 30 days. The most important variable in predicting 30-day mortality was the hospital where the patient was treated, with a relative importance of 35.5%. This was followed by the clinical presentation for angiography (21.1%), creatinine level (11.9%), Killip class (8.9%), and age at angioplasty (6.5%). Other less important factors included weight, height, and certain medical conditions such as hyperlipidemia, smoking status, and hypertension. Gender and previous stroke history had a low impact on 30-day mortality in TS patients.

Conclusions: The treating hospital was the most important factor in predicting 30-day mortality in TS. Since the level of evidence for recommended treatments of TS is low, our findings highlight the importance of conducting randomized studies in this patient group to improve care.