Abstract

Evaluation of the relationship between average APACHE II Score, FOUR Score and Tympanic temperature with survival and determining the optimal model in patients diagnosed with stroke referred to the emergency department of Shohadaye Ashayer Hospital in 1401

Introduction: The widespread use of early warning tools in the emergency department and the difference in predicting outcomes in patients stroke with disease severity tools have led to the emphasis on valid indicators and optimal models in the field of predicting mortality in hospitalized patients in the emergency department. The aim of the present study is to determine the relationship between the average APACHE II score, the FOUR score, and Tympanic temperature with survival, and to determine the optimal model in patients diagnosed with stroke presenting to the emergency department of Shohadaye Ashayer Hospital in 1401.

Methods: In a prospective cross-sectional study using a data collection tool, information on 273 patients with stroke was non-randomly and consecutively obtained in the emergency department of the specialized Neurology center of Shahid Ashayer, Kermanshah, in the first nine months of 1401. Demographic data, laboratory values, vital signs, and inpatient outcomes in the emergency department within the first 24 hours were used to calculate the APACHE II, FOUR, and Tympanic temperature scores. The performance of the three tools was compared in terms of ROC curve and predictive accuracy to introduce the optimal model.

Results: Based on the analysis of multivariable logistic regression models and generalized estimating equations, the adjusted APACHE II score, FOUR score, and Tympanic temperature were found to have a significant and influential relationship with predicting mortality in stroke patients presenting to the emergency department in a multivariable model ($P<0.001$). In determining the optimal model, the predictive accuracy of the adjusted APACHE II score, FOUR and Tympanic temperature tools, which actually corresponds to the area under the ROC curve, was found to be 98.0, 97.0, and 72.0, respectively, with diagnostic value ($P<0.001$).

Conclusion: The results of this study showed that the predictive accuracy of the adjusted APACHE II score in predicting mortality is higher than other tools used in the study, therefore, the implementation of this tool can be effective in prioritizing stroke patients for the allocation of necessary medical resources.

Key words: Stroke, APACHE II score, FOUR score, Tympanic temperature, Survival rate, Optimal model