Evaluation of GAP and RTS, and NTS Trauma Scores to Predict Prognosis of Multiple-trauma Patients

Abstract

Background and objective: Trauma is increasingly considered as an important cause of death and disability in developed and developing countries. Early diagnosis of major trauma and rapid transmission of patients to appropriate therapeutic centers have always been issues of concern. Several prognostic models for rapid clinical decision-making and estimating the mortality rate of multiple trauma patients. The current study aimed to evaluate the GCS, Age, and systolic blood pressure (GAP), RTS, and NTS scores of patients with multiple trauma and determine the cut-off points of these scores for predicting mortality rates.

Methods: This cross-sectional descriptive study was included 544 patients with multiple trauma referring to Imam Reza educational hospital of Tabriz, Iran in 2018-19. Data regarding age, mechanism of injury, systolic blood pressure, and Glasgow coma score were collected. GAP and RTS and NTS scores were calculated, and their relationship with was investigated.

Results: In the RTS model, the cut-off point value was 6.07 with areas under the Roc curves (0.99 with a confidence interval of 0.99 to 1.00), with a sensitivity of 0.98 and a specificity of 0.97. In the NTS model, the cut-off value was 6.14 with areas under the Roc curves (0.99 with a confidence interval of 0.99 to 1.00), with a sensitivity of 0.97 and specificity of 0.97. In the GAP model, the cut-off point value was 16.5 with areas under the Roc curves (0.99 with a confidence interval of 0.98 to 0.99), with a sensitivity of 0.95 and a specificity of 0.97. Results of logistic regression test to determine the predictive value of GCS, GAP, RTS, and NTS scores showed that survival per unit increase in GCS score was 3.5 times higher. This was about 2.23 times in the GAP. RTS had the highest predictive value (13.74 times).

Conclusion: Due to the high sensitivity and specificity of RTS, GAP and NTS models in patient survival rates, all of these scoring systems have predictive value and are not superior to each other.

Key words: Multiple Trauma, Mortality, Outcome Assessment, Emergency Service, Hospital