Trauma Scores and Outcome Prediction After Chest Trauma

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Abstract : Background: Early assessment of severity of chest trauma, either blunt or penetrating is of critical importance in prediction of patient outcome. Different trauma scoring systems are widely available and are based on anatomical or physiological parameters to expect patient morbidity or mortality. Up till now, there is no ideal, universally accepted trauma score that could be applied in all trauma centers and is suitable for assessment of severity of chest trauma patients. Aim: Our aim was to compare various trauma scoring systems regarding their predictability of morbidity and mortality in chest trauma patients. Patients and Methods: This study was a prospective study including 400 patients with chest trauma who were managed at Tanta University Emergency Hospital, Egypt during a period of 2 years (March 2014 until March 2016). The patients were divided into 2 groups according to the mode of trauma: blunt or penetrating. The collected data included age, sex, hemodynamic status on admission, intrathoracic injuries, and associated extra-thoracic injuries. The patients outcome including mortality, need of thoracotomy, need for ICU admission, need for mechanical ventilation, length of hospital stay and the development of acute respiratory distress syndrome were also recorded. The relevant data were used to calculate the following trauma scores: 1. Anatomical scores including abbreviated injury scale (AIS), Injury severity score (ISS), New injury severity score (NISS) and Chest wall injury scale (CWIS). 2. Physiological scores including revised trauma score (RTS), Acute physiology and chronic health evaluation II (APACHE II) score. 3. Combined score including Trauma and injury severity score (TRISS) and 4. Chest-Specific score Thoracic trauma severity score (TTSS). All these scores were analyzed statistically to detect their sensitivity, specificity and compared regarding their predictive power of mortality and morbidity in blunt and penetrating chest trauma patients. Results: The incidence of mortality was 3.75% (15/400). Eleven patients (11/230) died in blunt chest trauma group, while (4/170) patients died in penetrating trauma group. The mortality rate increased more than three folds to reach 13% (13/100) in patients with severe chest trauma (ISS of >16). The physiological scores APACHE II and RTS had the highest predictive value for mortality in both blunt and penetrating chest injuries. The physiological score APACHE II followed by the combined score TRISS were more predictive for intensive care admission in penetrating injuries while RTS was more predictive in blunt trauma. Also, RTS had a higher predictive value for expectation of need for mechanical ventilation followed by the combined score TRISS. APACHE II score was more predictive for the need of thoracotomy in penetrating injuries and the Chest-Specific score TTSS was higher in blunt injuries. The anatomical score ISS and TTSS score were more predictive for prolonged hospital stay in penetrating and blunt injuries respectively. Conclusion: Trauma scores including physiological parameters have a higher predictive power for mortality in both blunt and penetrating chest trauma. They are more suitable for assessment of injury severity and prediction of patients outcome.

Keywords : chest trauma, trauma scores, blunt injuries, penetrating injuries

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