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Predictive Factor of Mortality and the Scoring Systems

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Short Communication

Introduction

Polytrauma incidence are increasing across the world, being a major contributing factor for hospitalization of individuals under 65 years of age, and resulting in high mortality rates . Not only does it cost up to 5% of the healthcare budget in some countries, perhaps even more important to the finances/economy is the reduction of capable workers . Mortality of individuals under 65 years of age does not only impact a reduction in workforce but also leaves a burden on those that financial depended on them; especially their children who will now most likely depend on society for help. Characterization of injury severity is crucial to the scientific grading of trauma, numerous scoring systems exist, the focus will be on four Injury Severity Score (ISS), New Injury Severity Score (NISS), Revised Trauma Score (RTS) and Emergency Trauma Score (EMTRAS).

The Goal of the Study is to determine the best scoring system out of the four (ISS, NISS, RTS and EMTRAS) for predicting mortality of polytrauma patients within 30 minutes onset of injury. The research study has been done in the Emergency Center, Clinical Center of Vojvodina in Novi Sad, Serbia. Data has been collected from the Department of Anesthesia and Intensive Therapy. This was a retrospective study. The research encompassed 107 patients, ages from 20 years of age to 86 years of age. electivity was calculated for all of the four scoring systems with the following formula: True Positives/All the positives True positives are all the patients that were expected to have an unfavourable outcome (death) and did die. All the positives includes all the scores that were above a critical point and an unfavourable outcome was to be expected. Specificity was calculated for all of the four scoring system with the following formula: True Negatives/All the negatives. True negatives are all the patients that were expected to have a favourable outcome (survive) and did survive. All the negatives includes all the scores that were below a critical point and a favourable outcome was to be expected [1-17].

Results

The ratio of survivors to deaths was 78 to 29. Mortality rate being 27.1%. The average age of the survivors was 41.7 years and those that died was 57.5 years. Ratio of males to females was 84:23. Males represent 78.5% of the polytrauma patients while females represent 21.5%. Average stay in the hospital for the survivors was 16.2 days compared to 7.0 days for those that died. The main cause for polytrauma was by far traffic accidents, representing 3/4, followed by falls. All four of the scoring systems proved to be reliable for differentiating patients into the alive and dead groups, following are the average scores for the groups: ISS- Alive 21.1 and Dead 37.7 NISS-Alive 23.2 and Dead 43.7 RTS-Alive 9.9 and Dead 6.3 EMTRAS-Alive 2.3 and Dead 5.9. Selectivity and specificity values for prognosis of mortality rate are different in the four scoring systems: ISS- Selectivity 0.74 and Specificity 0.98 NISS-Selectivity 0.87 and Specificity 0.96. RTS- Selectivity 0.68 and Specificity 0.83 EMTRAS-Selectivity 0.71 and Specificity 0.88.

Conclusion

The ratio of survivors to deaths was 78 to 29. Mortality rate being 27.1%. The average age of the survivors was 41.7 years and those that died was 57.5 years. Ratio of males to females was 84:23. Males represent 78.5% of the polytrauma patients while females represent 21.5%. Average stay in the hospital for the survivors was 16.2 days compared to 7.0 days for those that died. The main cause for polytrauma was by far traffic accidents, representing 3/4, followed by falls. All four of the scoring systems proved to be reliable for differentiating patients into the alive and dead groups, following are the average scores for the groups: ISS- Alive 21.1 and Dead 37.7. NISS-Alive 23.2 and Dead 43.7 .RTS-Alive 9.9 and Dead 6.3. EMTRAS-Alive 2.3 and Dead 5.9. Selectivity and specificity values for prognosis of mortality rate are different in the four scoring systems: ISS- Selectivity 0.74 and Specificity 0.98. NISS-Selectivity 0.87 and Specificity 0.96. RTS- Selectivity 0.68 and Specificity 0.83.

EMTRAS-Selectivity 0.71 and Specificity 0.88. NISS is the best scoring system to use. It has proven to be the most reliable having the best selectivity and specificity for predicting mortality rate. Applying NISS, further improvements in therapy and procedures can be achieved for polytrauma patients, can further improve the cost benefit for the healthcare.

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