

The Use of Venous Glucose, Serum Lactate and Base Deficit as Biochemical Predictors of Mortality in Polytraumatized Patients: A comparative with Trauma and Injury Severity Score and Acute Physiology and Chronic Health Evaluation IV

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Abstract : Aim of the work: To evaluate the effectiveness of venous glucose, levels of serum lactate and base deficit in polytraumatized patients as simple parameters to predict the mortality in these patients. Compared to the predictive value of Trauma and injury severity (TRISS) and Acute Physiology And Chronic Health Evaluation IV (APACHE IV). Introduction: Trauma is a serious global health problem, accounting for approximately one in 10 deaths worldwide. Trauma accounts for 5 million deaths per year. Prediction of mortality in trauma patients is an important part of trauma care. Several trauma scores have been devised to predict injury severity and risk of mortality. The trauma and injury severity score (TRISS) was most common used. Regardless of the accuracy of trauma scores, is based on an anatomical description of every injury and cannot be assigned to the patients until a full diagnostic procedure has been performed. So we hypothesized that alterations in admission glucose, lactate levels and base deficit would be an early and easy rapid predictor of mortality. Patient and Method: a comparative cross-sectional study. 282 Polytraumatized patients attended to the Emergency Department(ED) of the Suez Canal university Hospital constituted. The period from 1/1/2012 to 1/4/2013 was included. Results: We found that the best cut off value of TRISS probability of survival score for prediction of mortality among poly-traumatized patients is = 90, with 77% sensitivity and 89% specificity using area under the ROC curve (0.89) at (95%CI). APACHE IV demonstrated 67% sensitivity and 95% specificity at 95% CI at cut off point 99. The best cutoff value of Random Blood Sugar (RBS) for prediction of mortality was >140 mg/dl, with 89%, sensitivity, 49% specificity. The best cut off value of base deficit for prediction of mortality was less than -5.6 with 64% sensitivity, 93% specificity. The best cutoff point of lactate for prediction of mortality was > 2.6 mmol/L with 92%, sensitivity, 42% specificity. Conclusion: According to our results from all evaluated predictors of mortality (laboratory and scores) and mortality based on the estimated cutoff values using ROC curves analysis, the highest risk of mortality was found using a cutoff value of 90 in TRISS score while with laboratory parameters the highest risk of mortality was with serum lactate > 2.6 . Although that all of the three parameter are accurate in predicting mortality in poly-traumatized patients and near with each other, as in serum lactate the area under the curve 0.82, in BD 0.79 and 0.77 in RBS.

Keywords : APACHE IV, emergency department, polytraumatized patients, serum lactate

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