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**Prognostic value of the admission shock index in predicting early mortality in STEMI patients**

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Introduction: Risk scores used for risk stratification in ST-segment elevation myocardial infarction (STEMI) such as Thrombolysis In Myocardial Infarction (TIMI) are widely used but their sophisticated calculation usually makes them inconvenient to operate at bedside in daily clinical practice. The shock index (SI), is a simple tool used in outcome assessment in critically ill patients, such as trauma (J trauma 2009), severe sepsis pulmonary embolism (Am J Cardiol 2008) and pneumonia (Respiration 2009). However, the prognostic value of SI in patients with STEMI has not been well understood.

Purpose: The present study, therefore, aims to investigate the usefulness of SI to evaluate the early mortality in patients with STEMI.

Methods: Retrospective analysis of a prospective registry of STEMI (January 2009-November 2014). Patients diagnosed with STEMI were included based on clinical, electrical and biological criteria. The demographics, co-morbidities, clinical and biological data and in-hospital procedures were collected. The admission SI was defined as the ratio of admission heart rate and systolic blood pressure. The admission TIMI risk score (TRS) was calculated according to the score criterion. The prognosis was based on the evaluation of early mortality at 7 day. The admission SI and TIMI score were compared. Receiver-operating characteristic (ROC) curves and tables were created to establish the optimal cut-off values for predicting early mortality for both SI and TIMI score.

Results: During the study period, 374 patients were enrolled. Mean age 59 ± 11 years, sex ratio at 5:4. Comorbidities n (%): current smoke 271 (72%), hypertension 128 (34%), Diabetes 130 (35%), dyslipidemia 62 (16%), coronary artery disease 44 (12%), stroke 20 (5%). Overall mortality was 10%. The prognostic value of the SI was demonstrated with a likelihood ratio to 13.5 (LR+ = 2.3) (p = 0.000). A cut-off at 0.7 was predictive of 7 day mortality and the Area Under Curve was 0.77 (p=0.000). The SI had a sensitivity of 51% and a specificity of 71%. Compared to the TIMI risk score, the LR was 48 (LR+ = 3.6) p = 0.000, The area under the curve was 0.86 (p=0.000). It has sensitivity and specificity at 78%.

Conclusion: In conclusion, both SI and TIMI risk score could predict early mortality in patients with STEMI, although the TIMI score is more accurate than SI. Thus, admission SI, an easily calculated index at first contact, may be a useful predictor for short-term outcomes especially for acute phase outcomes in patients with STEMI.