

INTRODUCTION

Shock Index (SI) has been associated with trauma severity, morbidity, utilization of hospital resources and mortality in trauma patients.

The mechanism to triage traumatized patients was standardized by the American College of Surgery, which established a four steps guideline for field triage injured patients.

Comparably, shock index has not been validated to determine the requirement of a level I trauma center attention in trauma victims.

OBJECTIVES

We sought out to compare the triage capabilities of the SI versus the established Triage Revised Trauma Score (tRTS) and the proposed triage steps by the American College of Surgeons (ACS).

METHODS

Patients >15 years, evaluated between January, 2012 and December, 2014 at our Regional Level I Trauma Center were included. The ability to discriminate patients with an Injury Severity Score (ISS) ≥ 9 was our cutoff point to evaluate triage tools. Sensitivity, specificity and AUROC curves were used to statically analyze each cutoff point.

Discrete variables are presented as proportions. Continuous as mean and standard deviation or median and interquartile rank, according to normality. Analyses were performed at different cut-points of SI, combined with the rules of triage of the ACS as well as RTS and the result of the triage, made with the ACS system. Analysis of the data was performed with STATA 12.1.

RESULTS

Data of 9847 patients were analyzed, 66.7% male, median age 32 years, (RIQ 24 – 45), 26.7% penetrating trauma. ISS was ≥ 9 in 1385 subjects (14.1%). Patients with ISS ≥ 9 were older, had a higher proportion of penetrating trauma and lower tRTS, with a p value <0.001.

Mortality in patients with ISS ≥ 9 was higher, compared with those with ISS <9 (16.0% vs. 0.15%), p<0.001. tRTS <11 had a low sensitivity and high specificity (table). When combined with the ACS steps it reached good discriminative ability. Balance between sensitivity and specificity of SI was poor. SI sensitivity improved after the addition of the complementary ACS criteria, but its specificity worsened, without reaching as good performance as ACS system.

Triage Rule	Sens	Sp	AUC (95% CI)
tRTS <11	0.40	0.94	0.69 (0.69 – 0.70)
Triage ACS*	0.94	0.83	0.83 (0.82 – 0.84)
SI >0.7	0.56	0.63	0.59 (0.57 – 0.60)
SI >0.8	0.40	0.86	0.63 (0.61 – 0.64)
SI >0.7+GCS<14	0.68	0.62	0.65 (0.64 – 0.66)
SI >0.8+GCS<14	0.58	0.85	0.71 (0.70 – 0.73)
SI >0.7+GCS<14+ age >55 years	0.82	0.53	0.67 (0.66 – 0.68)
SI >0.8+GCS<14+ age >55 years	0.74	0.74	0.74 (0.73 – 0.75)
SI >0.7+GCS<14+ age >55 years + anatomy	0.89	0.49	0.69 (0.68 – 0.70)
SI >0.8+GCS<14+ age >55 years + anatomy	0.89	0.67	0.77 (0.75 – 0.78)

* Includes tRTS< 11, GCS<14, age <55 years, anatomic and cinematic criteria

Table. Performance of evaluated triage rules

CONCLUSIONS

SI showed inferior discriminative ability to identify candidates for Trauma Center compared to the tRTS and the proposed triage steps by the American College of Surgeons.

Shock index should not replace tRTS as a triage tool.

REFERENCES

- Gottschalk SB, Wood D, DeVries S, Wallis L a, Bruijns S. The Cape Triage Score: a new triage system South Africa. Proposal from the Cape Triage Group. EMJ
- Chuang J-F, Rau C-S, Wu S-C, Liu H-T, Hsu S-Y, Hsieh H-Y, et al. Use of the reverse shock index for identifying high-risk patients in a five-level triage system. Scand J Trauma Resusc Emerg Med [Internet]. Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine; 2016;24(1):12.
- Newgard CD, Zive D, Holmes JF, Bulger EM, Staudenmayer K, Liao M, et al. A multisite assessment of the American College of Surgeons Committee on trauma field triage decision scheme for identifying seriously injured children and adults. J Am Coll Surg [Internet]. Elsevier Inc.; 2011;213(6):709–21.
- Newgard C, Zive D. A multi-site assessment of the ACSCOT field triage decision scheme for identifying seriously injured children and adults.
- Grimme K, Pape HC, Probst C, Seelis M, Sott A, Harwood P, et al. Calculation of different triage scores based on the German Trauma Registry: Value of the shock index. Eur J Trauma. 2005;31(5):480–7.
- Brillman JC, Doezeema D, Tandberg D, Sklar DP, Davis KD, Simms S, et al. Triage: Limitations in predicting need for emergent care and hospital admission. Ann Emerg Med. 1996;27(4):493–500.