ORIGINAL ARTICLE

Predicting mortality in adults hospitalized with multiple trauma: Can the BIG score estimate risk?

Adem Az, Özgür Söğüt, Mehmet Özçömlekçi, Yunus Doğan, Tarık Akdemir

Department of Emergency Medicine, University of Health Sciences, Haseki Training and Research Hospital, Istanbul-*Türkiye*

ABSTRACT

BACKGROUND: This study aimed to compare the predictive performance of the BIG score (base deficit + [2.5 × international normalized ratio (INR)] + [15 – Glasgow Coma Scale (GCS)]) for in-hospital mortality in adult patients with multiple trauma against other scoring systems, including the Glasgow Coma Scale (GCS), Revised Trauma Score (RTS), and Injury Severity Score (ISS).

METHODS: A retrospective single-center study was conducted, including 563 adults (aged ≥18 years) with multiple trauma who were admitted to the emergency department and hospitalized between January 2022 and December 2023. Demographic and clinical characteristics, as well as trauma scoring systems (e.g., GCS, RTS, ISS, and BIG score), were analyzed between survivors and non-survivors to identify factors associated with in-hospital mortality.

RESULTS: The BIG score, along with the RTS and ISS, was identified as an independent predictor of mortality in adults with multiple trauma ($p<0.001$ for all comparisons). A BIG score of 10.65 was determined as the mortality cut-off, with 67.7% sensitivity and 86.5% specificity (area under the curve: 0.847; 95% confidence interval: 0.808–0.886). The BIG score demonstrated higher positive predictive value (60.8%) and negative predictive value (89.6%) compared to the other trauma scoring systems. Estimated mortality risks for BIG scores of 15 and 20 were 50% and 80%, respectively.

CONCLUSION: The BIG score can accurately predict in-hospital mortality in adults with multiple trauma. Additionally, the BIG score was superior to the GCS, RTS, and ISS in predicting in-hospital mortality (ClinicalTrials.gov identifier: NCT06574464).

Keywords: BIG (base deficit, international normalized ratio, and Glasgow Coma Scale) score; Revised Trauma Score; Injury Severity Score; mortality; multiple trauma.

INTRODUCTION

Trauma is the leading cause of mortality and morbidity across most age groups.[1] Many trauma-related deaths occur either at the scene of the incident or within the initial four hours after the patient arrives at a trauma center.[2] Rapid and timely intervention is crucial for improving survival rates and reducing morbidity among trauma patients.[3] A swift assessment, early recognition of severe trauma, and appropriate treatment significantly influence outcomes.

Several trauma scoring systems have been developed to assess injury severity and monitor patient outcomes. Established systems include the Glasgow Coma Scale (GCS), Revised Trauma Score (RTS), and Injury Severity Score (ISS).[4] In a study of 633 trauma patients, Orhon et al.[5] found that the GCS and RTS were significant predictors of mortality. Similarly, Yadolahi et al.,[6] in a study of 1,410 trauma patients analyzing various trauma scores, found that both the RTS and ISS accurately predicted mortality among trauma patients. Additionally, in pediatric patients, the BIG score—calculated based on the base deficit (BD), International Normalized Ratio (INR), and Glasgow Coma Scale at admission—has been shown to predict mortality and morbidity with high accuracy.[7] However,

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Address for correspondence: Adem Az
University of Health Sciences, Haseki Training and Research Hospital, Department of Emergency Medicine, Istanbul, Türkiye
E-mail: adem.aaz@gmail.com

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the question remains whether the BIG score, originally designed for pediatric populations, can effectively predict mortality in adult trauma patients.

This study evaluated the efficacy and reliability of the BIG score in comparison to the GCS, RTS, and ISS for predicting in-hospital mortality in adults with multiple trauma presenting to the emergency department (ED).

MATERIALS AND METHODS

Ethics Committee Approval and Patient Consent

This study was conducted in accordance with the 1989 Declaration of Helsinki. The study protocol was approved by the Institutional Review Board (IRB) of Haseki Research and Training Hospital, Istanbul, Türkiye (approval no. 2023-202), and was registered in the National Library of Medicine Clinical Trial Registry (NCT06574464). As the images and accompanying text did not contain potentially identifying information or patient identifiers, the IRB did not require patient consent for the review of medical records.

Study Design and Setting

This retrospective, observational, single-center study included 563 consecutive adults (≥18 years old) with multiple trauma who were admitted to our ED and hospitalized between January 2022 and December 2023. Our hospital is a high-volume ED in Istanbul, handling approximately 1,500 patients daily, including over 200 trauma patients per day, ranging from mild to severe cases. Hospital automated systems and archives were reviewed for data on all patients presenting for the evaluation and treatment of acute trauma.

Multiple trauma was defined as injuries involving at least two body regions. Patients who experienced either blunt or penetrating injuries in the same anatomical region were classified as having penetrating injuries. Multiple injuries to the same anatomical region were categorized as a single injury to that specific region in this study.

We collected data on patient demographics (age and sex), vital signs on admission (systolic blood pressure [SBP, mmHg], heart rate [HR, beats/min], respiratory rate [RR, breaths/min], and peripheral oxygen saturation [SpO2, %]), presenting complaints and symptoms, anatomic region of injury, type of trauma (blunt or penetrating), mechanism of injury, BD measured in blood gasses, INR, trauma scoring systems (e.g., GCS, RTS, ISS, and BIG score), and clinical outcomes (discharge, hospitalization, or death).

The study cohort was divided into survivors and non-survivors. Survivors were defined as patients who remained alive after 28 days, while non-survivors were those who had passed away within that period. Demographics, clinical characteristics, and trauma scoring systems were compared between survivors and non-survivors to evaluate prognostic factors for patients with multiple trauma. Independent predictors of mortality were identified using multivariate logistic regression analysis of variables (demographic characteristics, clinical characteristics, and trauma scores) that showed significant differences between survivors and non-survivors. Receiver operating characteristic (ROC) curve analysis was conducted to determine cut-off values for the GCS, RTS, ISS, and BIG score, and to evaluate the sensitivity and specificity of these scoring systems in predicting in-hospital mortality.

Study Population and Sampling

To avoid selection bias, all patients meeting the eligibility criteria were included. Patients younger than 18 years and adults discharged from the ED were excluded. Patients with non-traumatic injuries and those who presented to the ED for non-trauma-related reasons were also excluded. Initially, the study enrolled 1,351 adult trauma patients admitted to the ED and subsequently hospitalized between January 2022 and December 2023. Of these, 118 patients were excluded due to missing BD and INR levels. Additional missing information resulted in the exclusion of 21 patients, while 11 patients were excluded because they were admitted to the hospital more than 24 hours after the trauma occurred. Furthermore, 612 patients with single trauma (e.g., isolated extremity trauma, isolated head injury, etc.) and 37 patients with chronic conditions such as chronic renal failure, hepatic disease, hematological disorders, or neurological diseases were excluded. The final study population included 563 patients.

Trauma Severity Scores

The RTS is a physiological scoring system used to assess the severity of traumatic injuries. It evaluates three key parameters: GCS, SBP, and RR, with a maximum total score of 12 points.[5] The study team retrospectively calculated the RTS on admission by retrieving GCS scores, SBP, and RR per minute from the hospital's automated systems and archives.

The ISS is an anatomical scoring system that assesses the severity of injuries sustained by trauma patients. It provides a numerical value based on the anatomical regions of the body affected by trauma and the severity of those injuries. The ISS is calculated by dividing the body into six regions: the head/neck, face, chest, abdomen/pelvis, extremities, and external. Each region is assigned a score ranging from 1 to 6, where 1 indicates minor injury and 6 indicates a severe injury. The highest score from each region is squared, and the scores are summed to calculate the overall ISS.[8]

The trauma BIG score is used to predict post-traumatic injury severity and mortality. Originally designed for pediatric populations, the BIG score is calculated using BD, INR, and GCS scores at admission, using the following formula:[7]

$$\text{BIG score} = (\text{admission BD}) + (2.5 \times \text{INR}) + (15 - \text{GCS}).$$

Statistical Analysis

The data were analyzed using SPSS (version 27.0 for Windows; SPSS, Chicago, IL, USA). Categorical variables were expressed as numbers (n) and percentages (%), while numerical data were presented as means, standard deviations, and ranges. The distribution of variables was evaluated using the Kolmogorov-Smirnov test. Intergroup analyses (survivors vs. non-survivors) were performed using the chi-square test for categorical data, the t-test for normally distributed data, and the Mann-Whitney U test for non-normally distributed data, as appropriate. Independent predictors of mortality—including SBP, HR, SpO2, GCS, RTS, ISS, and BIG score—were identified through univariate and multivariate logistic regression analyses. ROC curve analysis was used to determine cut-off values for the GCS, RTS, ISS, and BIG score. The threshold for statistical significance was set at $p<0.05$.

Table 1. Demographic and clinical characteristics of adults hospitalized with multiple trauma

Characteristics			
Age in years, Mean±SD (min – max)		57.53±24.88 (18 - 104)	
		n	**%**
Sex			
	Female	227	40.32
	Male	336	59.68
Type of trauma	Blunt	434	77.09
	Penetrating	129	22.91
Trauma etiologies	Fall	333	59.15
	Traffic accident	118	20.96
	Gunshot wounds	65	11.55
	Stab wounds	37	6.57
	Assault	10	1.78
Anatomical regions	Lower extremities	324	57.55
	Head and face	197	34.99
	Abdomen and Pelvis	123	21.85
	Chest	118	20.96
	Spine	70	12.43
	Upper Extremities	64	11.37
Clinical outcomes	28-days mortality	133	23.62
	Hospitalization		
	ICU	117	20.78
	General surgery	255	45.29
	Orthopedics	71	12.61
	Neurosurgery	70	12.43
	Cardiovascular surgery	6	1.06
	Thoracic surgery	6	1.06
	Urology	4	0.71

Data were given as numbers (n) and percentages (%), mean, standard deviation (SD), minimum and maximum values. Abbreviations: ICU, Intensive care unit.

RESULTS

Table 1 summarizes the demographic and clinical characteristics of the study cohort. The mean age of the 227 females (40.32%) and 336 males (59.68%) was 57.53±24.88 years. Among the patients, 77.09% (n=434) presented with blunt trauma, while 22.91% (n=129) had penetrating injuries. Falls (n=333, 59.15%) and traffic accidents (n=118, 20.96%) were the most common trauma etiologies. The lower extremities (n=324, 57.55%) and head/face (n=197, 34.99%) were frequently affected anatomical regions. The overall mortality rate was 23.62% (n=133). Additionally, 117 (20.78%) patients required intensive care unit follow-up, while 255 (45.29%) were admitted to general surgery.

Table 2 compares the demographics, clinical characteristics, and trauma scores between survivors and non-survivors. Age and sex did not differ significantly between survivors and non-survivors (p=0.627 and p=0.463, respectively). Non-survivors had significantly lower SBP and SpO2 levels, as well as higher HR compared to survivors (p<0.001, p=0.005, and p<0.001, respectively). Non-survivors also exhibited significantly lower GCS and RTS values but higher ISS and BIG score values (all p<0.001). Similarly, a comparative analysis of trauma scores

Table 2. Comparative analysis of demographics, clinical characteristics, and trauma scores of the patients who did and did not survive

	Survivors		Non-survivors		p*
Age in years, Mean±SD	57.21±25.44		58.53±23.00		0.627
	n	%	n	%	p*
Sex					
Female	177	33.45	50	37.59	0.463
Male	255	66.55	83	62.41	
Trauma etiologies					
Fall	261	47.59	72	54.13	0.137
Traffic accident	82	30.00	36	27.08	
Gunshot wounds	49	11.38	16	12.03	
Stab wounds	28	4.48	9	6.77	
Assault	10	4.14	–	0.00	
Type of trauma					
Blunt	326	83.10	108	89.29	0.196
Penetrating	104	16.90	25	10.71	
Vital signs	Mean±SD		Mean±SD		p*
Systolic blood pressure (mmHg)	127.63±22.58		107.52±31.67		<0.001
Heart rate (beats/min)	87.74±15.51		97.13±27.45		0.005
Respiratory rate (breaths/min)	18.50±3.26		19.16±4.24		0.145
Peripheral oxygen saturation (%)	93.70±4.28		91.77±5.38		<0.001
Trauma scores	Mean±SD		Mean±SD		p*
Glasgow coma scale	14.31±2.04		12.28±4.30		<0.001
Injury severity score	23.48±8.75		40.29±23.42		<0.001
Revised trauma score	11.54±1.64		9.77±4.06		<0.001
BIG score	7.04±3.77		15.71±7.93		<0.001

Data were given as numbers (n) and percentages (%), mean, and standard deviation (SD). *Intergroup analyses (survivors vs. non-survivors) were conducted using the chi-squared test for categorical data, the t-test for normally distributed data, and the Mann-Whitney U test for non-normally distributed data, as appropriate.

based on the type of trauma revealed that non-survivors had significantly lower GCS and RTS values and higher ISS and BIG scores for both blunt and penetrating trauma cases (all p<0.001) (Table 3).

In univariate logistic regression analyses, SBP, HR, SpO2, GCS, ISS, RTS, and the BIG score were all significantly associated with mortality (all p<0.001). After adjusting for other variables, multivariate logistic regression analysis identified only SBP (odds ratio [OR]: 0.984, 95% confidence interval [CI]: 0.972–0.995; p=0.006), SpO2 (OR: 0.945, 95% CI: 0.8997–0.994; p<0.029), ISS (OR: 1.050, 95% CI: 1.028–1.072; p<0.001), RTS (OR: 1.310, 95% CI: 1.234–1.392; p<0.001), and the BIG score (OR: 1.476, 95% CI: 1.262–1.725; p<0.001) as significant predictors of mortality among hospitalized adults with multiple trauma (Table 4). For patients with blunt trauma, SBP (OR: 0.966, 95% CI: 0.952–0.981; p<0.001), SpO2 (OR: 0.906, 95% CI: 0.843–0.974; p=0.007), ISS (OR: 1.050, 95% CI: 1.023–1.078; p<0.001), RTS (OR: 1.374, 95% CI: 1.268–1.490; p<0.001), and BIG score (OR: 1.510, 95% CI: 1.220–1.868; p<0.001) were identified as independent predictors of mortality. In contrast, for patients with penetrating trauma, ISS (OR: 1.104, 95% CI: 1.046–1.165; p<0.001), RTS (OR: 1.269, 95% CI: 1.110–1.452; p=0.001), and BIG score (OR: 1.359, 95% CI: 1.028–1.798; p=0.031) were independent predictors of mortality (Table 5).

A GCS score of 14 showed 42.9% sensitivity and 83.0% specificity for predicting mortality, with an area under the curve (AUC) of 0.639 (95% CI: 0.581–0.697). An RTS of 11 was

Table 3. Comparative analysis of trauma scores between survivors and non-survivors in blunt and penetrating trauma patients.

	Survivors	Non-survivors	
Blunt trauma	**Mean±SD**	**Mean±SD**	**p***
Glasgow coma scale	14.50±1.59	12.91±3.75	<0.001
Injury severity score	22.14±7.94	35.46±21.19	<0.001
Revised trauma score	11.73±1.12	10.36±3.39	<0.001
BIG score	6.69±3.06	14.34±7.30	<0.001
Penetrating trauma			
Glasgow coma scale	13.70±2.97	9.56±5.42	<0.001
Injury severity score	27.67±9.82	61.12±21.41	<0.001
Revised trauma score	10.92±2.59	7.20±5.59	<0.001
BIG score	8.14±5.29	21.63±7.97	<0.001

Data were given as mean and standard deviation (SD). *Intergroup analyses (survivors vs. non-survivors) were conducted using the Mann-Whitney U test for non-normally distributed data.

Table 4. Univariate and multivariate logistic regression analysis to determine mortality in adults hospitalized with multiple trauma

	Univariate Model			Multivariate Model		
	p	**OR**	**95% CI**	**p**	**OR**	**95% CI**
Systolic blood pressure (mmHg)	<0.001	0.971	0.964 – 0.979	0.006	0.984	0.972 – 0.995
Heart rate (beats/min)	<0.001	1.023	1.013 – 1.033			
Peripheral oxygen saturation (%)	<0.001	0.921	0.884 – 0.960	0.029	0.945	0.897 – 0.994
Glasgow coma scale	<0.001	0.815	0.764 – 0.869			
Injury severity score	<0.001	1.070	1.054 – 1.086	<0.001	1.050	1.028 – 1.072
Revised trauma score	<0.001	1.283	1.224 – 1.344	<0.001	1.310	1.234 – 1.392
BIG score	<0.001	0.795	0.735 – 0.860	<0.001	1.476	1.262 – 1.725

Abbreviations: OR: Odds ratio; CI: Confidence interval.

Table 5. Univariate and multivariate logistic regression analysis to determine mortality in adults hospitalized with blunt and penetrating trauma

	Univariate Model			Multivariate Model		
Blunt Trauma	**p**	**OR**	**95% CI**	**p**	**OR**	**95% CI**
Systolic blood pressure (mmHg)	<0.001	0.958	0.947 – 0.969	<0.001	0.966	0.952 – 0.981
Heart rate (beats/min)	<0.001	1.028	1.015 – 1.042			
Peripheral oxygen saturation (%)	<0.001	0.891	0.842 – 0.943	0.007	0.906	0.843 – 0.974
Glasgow coma scale	<0.001	0.789	0.720 – 0.865			
Injury severity score	<0.001	1.071	1.050 – 1.092	<0.001	1.050	1.023 – 1.078
Revised trauma score	<0.001	1.359	1.272 – 1.451	<0.001	1.374	1.268 – 1.490
BIG score	<0.001	0.717	0.614 – 0.836	<0.001	1.510	1.220 – 1.868
Penetrating Trauma	**p**	**OR**	**95% CI**	**p**	**OR**	**95% CI**
Sex	0.058	0.337	0.109 – 1.038			
Glasgow coma scale	<0.001	0.803	0.725 – 0.889			
Injury severity score	<0.001	1.120	1.075 – 1.167	< 0.001	1.104	1.046 – 1.165
Revised trauma score	<0.001	1.268	1.167 – 1.378	0.001	1.269	1.110 – 1.452
BIG score	<0.001	0.805	0.723 – 0.896	0.031	1.359	1.028 – 1.798

Abbreviations: OR, odds ratio; CI, confidence interval.

Table 6. Trauma scores for determining mortality in adults hospitalized with multiple trauma

Criterion	AUC	95% CI	Sensitivity	Specificity	PPV	NPV
GCS ≤ 14	0.639	0.581 – 0.697	42.9	83.0	43.8	82.4
RTS ≤ 11	0.642	0.584 – 0.700	42.9	84.0	45.2	82.6
ISS > 24	0.702	0.646 – 0.758	69.9	64.2	37.7	87.3
BIG > 10.65	0.847	0.808 – 0.886	67.7	86.5	60.8	89.6

Abbreviations: AUC: Area under the curve; CI: Confidence interval; PPV: Positive predictive value; NPV: Negative predictive value; RTS: Revised trauma score; ISS: Injury severity score; GCS: Glasgow coma scale.

identified as the cut-off for mortality, with 42.9% sensitivity and 84.0% specificity (AUC: 0.642, 95% CI: 0.584–0.700). An ISS score of 24 had 69.9% sensitivity and 64.2% specificity for predicting mortality, with an AUC of 0.702 (95% CI: 0.646–0.758). Although the positive predictive value (PPV) for ISS was low (37.7%), the negative predictive value (NPV) was 87.3%. Finally, a BIG score of 10.65 was identified as the cut-off for mortality, with 67.7% sensitivity and 86.5% specificity (AUC: 0.847, 95% CI: 0.808–0.886). The BIG score had a higher PPV (60.8%) and NPV (89.6%) than the other trauma scores (Table 6, Fig. 1).

Figure 2 illustrates the relationship between the risk of mortality and trauma scores. As the BIG score increases, the estimated risk of mortality also rises substantially. Specifically, a BIG score of 15 was associated with a 50% risk of mortality, while a BIG score of 20 corresponded to an 80% risk of mortality. Additionally, a GCS score of 4, an RTS of 6, and an ISS of 70 were associated with mortality risks of 70%, 50%, and 80%, respectively.

DISCUSSION

Several clinical studies have demonstrated that the BIG score is superior to other trauma scoring systems in accurately assessing trauma severity and prognosis in pediatric patients.[7, 9-10] However, its utility in adult trauma is uncertain due to limited research. In this study, we compared the efficacy and reliability of the BIG score with the GCS, RTS, and ISS for predicting mortality in adults hospitalized with multiple trau-

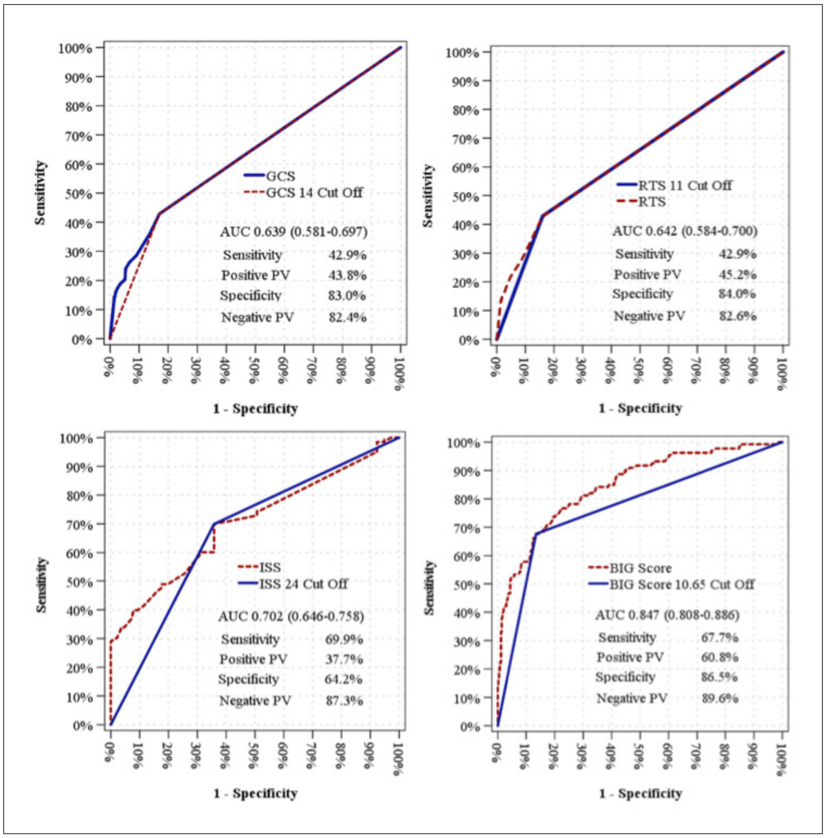

Figure 1. Specificity and sensitivity of the Glasgow Coma Scale, Revised Trauma Score, Injury Severity Score, and Trauma BIG Score (Blood pressure, Injury severity, Glasgow Coma Scale score) for determining mortality in adults hospitalized with multiple trauma using receiver operating characteristic curves.

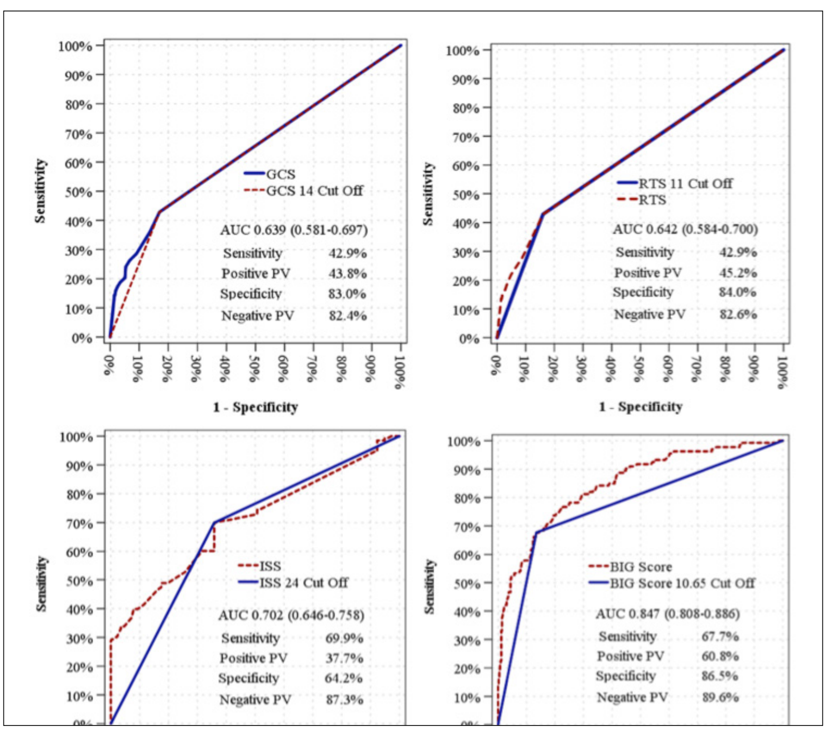

Figure 2. Estimated mortality risk, based on the Glasgow Coma Score, Revised Trauma Score, Injury Severity Score, and Trauma BIG Score levels.

ma. Our main findings were as follows: First, the BIG score was an independent predictor of mortality in adults with multiple trauma, alongside the RTS and ISS, for both blunt and penetrating trauma. A BIG score >10.65 was identified as the cutoff for mortality, with a sensitivity of 67.7% and a specificity of 86.5%. Additionally, it demonstrated higher PPV and NPV compared to the other metrics. Finally, the estimated risk of mortality was 50% and 80% for BIG scores of 15 and 20, respectively.

We found that the BIG score can predict in-hospital mortality for both blunt and penetrating trauma in the adult population. Moreover, it was the best predictor of mortality, with an AUC of 0.847, outperforming the GCS, RTS, and ISS. Developed by Borgman et al.,[7] the BIG score has emerged as a promising tool for predicting disease severity and mortality in pediatric trauma patients. In their original study, Borgman et al.[7] demonstrated that the BIG score had superior predictive ability for mortality in pediatric trauma patients, with an AUC of 0.890. Three prior studies have validated the efficacy of the BIG score in adult trauma populations. Brockamp et al.[11] were the first to evaluate the BIG score in adults and found that it performed well compared to established scoring systems, such as the Trauma and Injury Severity Score (TRISS) and the Probability of Survival Score (PS09), in predicting mortality in adults. Similarly, in a study of adult trauma patients, Hoke et al.[4] compared the BIG score with the ISS, New Injury Severity Score (NISS), RTS, and TRISS, concluding that the BIG score was a strong predictor of mortality in trauma patients. Furthermore, in a study of 5,605 adult trauma patients, Park et al.[12] observed that the predictive value of the BIG score for mortality among adult trauma patients was significantly higher than that of the RTS and ISS. Additionally, we found that the BIG score had a higher PPV and NPV compared to other scoring systems. This suggests that the BIG score is effective not only in identifying patients at high risk of mortality but also in accurately predicting survival outcomes.

Most scoring systems and algorithms for predicting mortality in trauma are limited by their complexity and the multitude of variables involved in their calculations, posing challenges for practical application.[11] The RTS relies solely on physiological data, making it easier to calculate and use during the initial assessment of trauma patients. However, it may not provide comprehensive or standardized results across all trauma populations.[13] The ISS, primarily designed for research purposes, is not intended for bedside decision-making in the ED. It also focuses on anatomical factors that may not be readily available or relevant during the acute phase of injury management.[12] In contrast, the GCS provides information solely on the patient's level of consciousness and may not account for other important physiological parameters.[14] The BIG score simplifies the assessment by excluding anatomical and hemodynamic parameters, instead focusing on the GCS, BD, and INR. These parameters are readily available in the ED and do not require complex calculations or additional data.

To predict mortality rates accurately, trauma mortality scores should be assessed in trauma populations with severe injuries. For this reason, our study included patients with multiple trauma who were then hospitalized. However, our study also had several limitations. Due to its retrospective design and the use of registry data, we were unable to identify potential medical errors that could have influenced clinical outcomes. Additionally, the study was conducted at a single center, which may limit the generalizability of our findings. Furthermore, cases excluded due to missing data or other reasons could have introduced patient selection bias.

CONCLUSION

Our findings demonstrate that the BIG score, originally developed to assess disease severity and prognosis in pediatric trauma patients, can also predict in-hospital mortality for both blunt and penetrating trauma in the adult population. The BIG score predicts in-hospital mortality substantially better than other trauma scoring systems, such as the GCS, RTS, and ISS. Additionally, it is highly effective not only for identifying patients at high risk of mortality but also for accurately predicting survival outcomes. Finally, we observed that the estimated risk of mortality was 50% for a BIG score of 15, and this risk increased to 80% for a BIG score of 20.

Ethics Committee Approval: This study was approved by the Institutional Review Board of Haseki Research and Training Hospital Ethics Committee (Date: 22.11.2023, Decision No: 2023-202).

Peer-review: Externally peer-reviewed.

Authorship Contributions: Concept: A.A., Y.D.; Design: A.A., T.A.; Supervision: A.A., O.S; Resource: M.O., Y.D., T.A.; Materials: M.O., Y.D.; Data collection and/or processing: M.O., Y.D., T.A.; Analysis and/or interpretation: A.A., O.S., M.O.; Literature review: A.A., O.S., Y.D.; Writing: A.A., O.S., T.A.; Critical review: A.A., O.S.

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ORİJİNAL ÇALIŞMA - *ÖZ*

Çoklu travma nedeniyle hastaneye kaldırılan yetişkinlerde mortalite tahmini: BIG skoru riski tahmin edebilir mi?

AMAÇ: Glasgow koma skoru (GKS), revize travma skoru (RTS) ve yaralanma şiddeti skoru (YŞS) ile yetişkin çoklu travma hastalarında hastane içi mortalite için BIG skorunun (Baz eksisi + [2.5×INR] + [15–GKS]) öngörücü performansını karşılaştırmak.

GEREÇ VE YÖNTEM: Bu retrospektif tek merkezli çalışmaya, Ocak 2022 ile Aralık 2023 arasında acil servisimize başvuran ve hastaneye yatırılarak takip edilen çoklu travması olan 563 yetişkin (≥18 yaş) alındı. Hastaların demografik ve klinik özellikleri ve travma skorları (örn. GKS, RTS, YŞS ve BIG skoru), hastane içi mortalite ile ilişkili faktörleri belirlemek için sağ kalanlar ve sağ kalmayanlar arasında karşılaştırıldı.

BULGULAR: BIG skoru, RTS ve YŞS ile birlikte çoklu travması olan yetişkinlerde mortalitenin bağımsız bir öngörücüsüydü (tüm karşılaştırmalar için $p<0.001$). BIG skoru için 10.65, %67.7 duyarlılık ve %86.5 özgüllükle ölüm oranı için kesme noktası olarak belirlenmiştir (eğri altındaki alan 0.847, %95 güven aralığı 0.808-0.886). BIG skoru, diğer travma skorlarından daha büyük pozitif (%60.8) ve negatif (%89.6) öngörü değerlerine sahipti. Tahmini ölüm riski, sırasıyla 15 ve 20 olan BIG skorları için %50 ve %80 idi.

SONUÇ: BIG skoru, çoklu travması olan yetişkinlerde hastane içi ölüm oranını doğru bir şekilde tahmin edebilir. Dahası, BIG skoru hastane içi ölüm oranını tahmin etmede GKS, RTS ve YŞS'den üstündü (ClinicalTrials.gov numarası, NCT06574464).

Anahtar sözcükler: BIG skor; revize travma skoru; yaralanma şiddeti skoru; mortalite; çoklu travma

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