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Comparing prognostic scoring systems in acute pancreatitis: Bedside Index of Severity in Acute Pancreatitis, WL, and Chinese Simple Scoring System Scores

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Abstract:

OBJECTIVES: Several scoring systems are used to predict prognosis in acute pancreatitis (AP), but their predictive success varies. This study compares the validity of the commonly used Bedside Index of Severity in AP (BISAP) score with the newly developed WL score and the Chinese Simple Scoring System (CSSS) score in predicting mortality and unfavorable prognostic outcomes in AP patients.

METHODS: This retrospective descriptive study included all AP patients presenting to the emergency department from June 2, 2019, to June 2, 2022. Patient demographics, vital signs, laboratory values, and imaging findings were recorded, and WL, CSSS, and BISAP scores were calculated. The effectiveness of these scores in predicting adverse outcomes and mortality was compared.

RESULTS: Among 357 patients, 53.2% were male, with a median age of 62 years (interquartile range: 48–75). Area under the curve (AUC) values for 7-day outcomes were 0.956 for WL, 0.759 for CSSS, and 0.871 for BISAP; for 30-day outcomes, AUC values were 0.941 for WL, 0.823 for CSSS, and 0.901 for BISAP; and for poor prognostic outcomes, AUC values were 0.792 for WL, 0.769 for CSSS, and 0.731 for BISAP.

CONCLUSION: In AP patients, WL, CSSS, and BISAP scores are effective predictors of unfavorable prognosis and mortality. WL score outperforms the CSSS and BISAP scores in predicting 7-day and 30-day mortality and poor prognosis. After WL, BISAP is the second-best system for predicting mortality. For predicting unfavorable prognoses, CSSS is the second-best system after WL. The simplicity of calculating the WL score based on four laboratory parameters makes it a preferable choice.

Keywords:

Acute pancreatitis, Bedside Index of Severity in Acute Pancreatitis, Chinese Simple Scoring System, emergency department, mortality, outcomes, scoring systems, WL

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Introduction

Acute pancreatitis (AP), a common abdominal emergency, has an incidence of 38/100,000 persons and a mortality rate ranging from 2% to 10%. In severe cases, the mortality rate can escalate to 15%–35%. Clinical presentations vary from mild, responsive to medical treatment, to severe forms with systemic symptoms, sepsis, and multi-organ failure.[1] Various scoring systems exist to predict prognosis, with

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Box-ED Section

What is already known on the study topic?

- Many scoring systems have been developed to predict the prognosis of acute pancreatitis (AP).

What is the conflict on the issue? Has it importance for readers?

- It is unclear which scoring system is more effective in predicting mortality and morbidity in patients with AP.

How is this study structured?

- This was a single-center, retrospective, descriptive study that included data from 357 patients.

What does this study tell us?

- WL, Chinese Simple Scoring System (CSSS), and Bedside Index of Severity in AP (BISAP) scores are effective determinants of morbidity and mortality in AP patients
- WL score outperforms the CSSS and BISAP scores in predicting 7-day and 30-day mortality and poor prognosis.

inconsistent results.[2-4] The Bedside Index of Severity in AP (BISAP) can assess severity within 24 h, showing sensitivity of 70.6% and specificity of 93.3%.[5] The Chinese Simple Scoring System (CSSS) scoring system was introduced following a retrospective study conducted on 585 patients in a Shanghai Hospital between 2009 and 2017.[6] Sensitivity was reported to be 52%–61% and specificity 87%–89%.[2,6] The Wang et al score (WL) is a scoring system developed to predict organ failure based on two studies published in 2019 and 2020. While low calcium and albumin levels indicate increased mortality, high creatinine and lactate dehydrogenase (LDH) levels are also indicators of high mortality. A sensitivity of 73% and specificity of 94% for transient organ dysfunction, a sensitivity of 82% and specificity of 81% for permanent organ damage, and a sensitivity of 93% and specificity of 93% for predicting fatal disease progression have been reported.[7,8] Although the BISAP score has been used for many years, there are few studies on the CSSS and WL.[2,7] In this study, we aimed to compare the predictive validity of the BISAP, WL, and CSSS scores for mortality and adverse prognostic outcomes in patients diagnosed with AP in the emergency department.

Methods

This retrospective descriptive study included all adult patients diagnosed with AP at Dokuz Eylul University Hospital's Adult Emergency Department between June 2, 2019, and June 2, 2022. Patients who met at least two of the following three criteria were diagnosed with AP: (1) abdominal pain suggestive of AP, (2) serum lipase levels at least three times the upper normal limit, and (3) characteristic findings on abdominal imaging; enlarged pancreas with ill-defined margins, peripancreatic inflammation or stranding of the surrounding fat, thickening of the fascial planes, presence of pancreatic or peripancreatic necrosis, and presence of intraperitoneal or retroperitoneal fluid collections.

Patients with pancreatic cancer, end-stage malignancies, or serious diagnoses that could affect treatment outcomes (e.g., end-stage heart failure, multi-organ failure, and chronic kidney disease requiring routine hemodialysis) and those with missing medical records were excluded from the study. For patients with multiple admissions, each admission was considered a separate case.

The study was started after obtaining the permission of the Dokuz Eylul University Faculty of Medicine Clinical Studies Ethics Committee (Decision no: 2022/22-18 Date: June 29, 2022).

Data collection

Demographic information (age and sex), vital signs (blood pressure, heart rate, respiratory rate, saturation, and body temperature), consciousness status, laboratory parameters (glucose, blood urea nitrogen [BUN], creatinine, calcium, LDH, albumin, white blood count, and C-reactive protein [CRP]), imaging findings (presence of pleural effusion and extent of pancreatic necrosis), development of adverse prognostic conditions, and outcomes (survival or death at 7 and 30 days) were extracted from emergency department records stored in the hospital-based information system. These data were used to calculate the WL, CSSS, and BISAP scores.

Calculation of the scoring systems

The parameters used in the scoring systems and their corresponding scoring values are shown in Table 1.

Bedside Index of Severity in Acute Pancreatitis Score

Within the first 24 h after admission, a total of five parameters were assessed, each receiving a score of 1. Patients with scores between 0 and 2 were classified as having low mortality (<2%) and as having "mild pancreatitis," whereas patients with scores above 2 were classified as having high mortality (>15%) and as having "severe pancreatitis."

Chinese Simple Scoring System score

The CSSS score was calculated by assigning 9 points based on serum creatinine, blood glucose, LDH, CRP, heart rate, and pancreatic necrosis score. A total score above 4 indicates a severe course, whereas a score above 6 indicates a fatal outcome.

Table 1: The Bedside Index of Severity in Acute Pancreatitis, Chinese Simple Scoring System, and WL scoring systems

BISAP score	
Parameters	**Score**
BUN >25 mg/dL	1
Altered mental status	1
Age >60	1
Presence of pleural effusion on imaging	1
Presence of two or more SIRS criteria (body temperature <36°C or >38°C, respiratory rate >20 breaths/min or $PaCO_2$ <32 mmHg, heart rate >90 beats/min, WBC count >12,000 cells/mm³ or <4000 cells/mm³ or >10% immature forms)	1

CSSS score					
Parameters	**0**	**1**	**2**	**3**	**4**
Creatinine (μmol/L)	<100	>100			
Blood glucose (mmol/L)	<12	>12			
LDH (U/L)	<380	>380			
CRP (mg/L)	<65	>65			
Heart rate (beats/min)	<100	>100			
Pancreatic necrosis ratio (%)	0	<30	30–50	50–70	>70

WL score				
Parameters	**0**	**1**	**2**	**3**
LDH (U/L)	<270.5	<346.5	<404.5	>404.5
Creatinine (μmol/L)	<69.65	<73.85	<110.65	>110.65
Albumin (g/dL)	>35.85	>33.45	>32.05	<32.05
Calcium (mg/dL)	>2.115	>1.955	>1.665	<1.665

BISAP: Bedside Index of Severity in Acute Pancreatitis, BUN: Blood urea nitrogen, CRP: C-reactive protein, CSSS: Chinese Simple Scoring System, LDH: Lactate dehydrogenase, SIRS: Systemic ınflammatory response syndrome, WBC: White blood count, WL: Wang et al score

WL score

The WL score is a new scoring system modified by Chinese author Wang *et al*.[2] from the CSSS score. In our article, we coined this scoring system as the WL score, derived from the initials of the author's first and last name. The WL score was calculated using LDH, creatinine, albumin, and calcium levels.

Outcome criteria

- Mortality was assessed using 7-day and 30-day mortality rates
- As criteria for unfavorable prognostic outcomes, the patient's course during follow-up and treatment was assessed for the development of respiratory failure, renal failure, sepsis, cardiovascular failure, intubation, admission to the intensive care unit, and cardiac arrest. If at least one of these criteria was met, it was considered an unfavorable prognostic outcome. The defined parameters for organ dysfunction in the cardiovascular, pulmonary, and renal systems are as follows:
  - Cardiovascular: Systolic blood pressure <90 mmHg despite fluid resuscitation, need for inotropic support
  - Pulmonary: PaO_2 <60 or need for mechanical ventilation
  - Renal: Increase in serum creatinine >2 mg/dL (despite fluid resuscitation) or need for hemodialysis (except in patients with routine hemodialysis and chronic kidney disease).

Statistical analysis

Data were analyzed with the SPSS 29.0 software package (IBM Corporation, Armonk, New York, USA). Data normality was assessed using the Kolmogorov–Smirnov test, and homogeneity of variance was tested with Levene's test. Nonnormally distributed data were expressed as the median and interquartile range (IQR), with statistical analysis conducted using the Mann–Whitney *U*-test. Categorical data were presented as proportions and percentages, and the Chi-square test or Fisher's exact test was used for statistical analysis. Statistical significance was set at $P < 0.05$. The Area Under Curve (AUC) was calculated using receiver operating characteristic (ROC) curve analysis.

Results

Among 475 pancreatitis-diagnosed patients in the emergency department, 357 were included, while 118 were excluded. Exclusions comprised 37 patients refusing treatment, 41 not undergoing computed tomography, 12 with missing laboratory values, 13 with serious diagnoses that could affect treatment outcomes (e.g., chronic heart failure, routine hemodialysis, perforation, and multi-organ dysfunction), 10 with chronic pancreatitis, and 5 with pancreatic masses.

Demographic characteristics

Of the patients, 167 (46.8%) were female and 190 (53.2%) were male, with a median age of 62 (IQR: 48–75). The mean age of females (63.2 ± 17.2, range: 23–94) was higher than that of males (58.27 ± 18, range: 18–94) ($P = 0.009$).

Unfavorable prognostic outcomes

Of the patients, 249 (69.8%) had no adverse prognostic events, whereas 108 (30.2%) had at least one adverse prognostic event. The most common adverse prognostic events included sepsis ($n = 88$, 25%), renal failure ($n = 42$, 12%), respiratory failure ($n = 24$, 8%), admission to intensive care unit ($n = 14$, 4%), intubation ($n = 9$, 3%), decompensated heart failure ($n = 8$, 2%), and cardiac arrest ($n = 8$, 2%). The median age of patients with adverse events was 69 (IQR: 57–81), significantly higher than the median age of patients without adverse events, which was 59 (IQR: 45–71) ($P < 0.001$). There was no significant difference between genders in the presence of adverse prognostic outcomes ($P = 0.202$).

Mortality results

Three female and two male patients, for a total of five patients, died at the 7-day endpoint. There was no significant difference in mortality between the

genders (1.8% and 1.1%, P = 0.668). At the 30-day endpoint, eight patients died, including six women and two men (3.6% and 1.1%, P = 0.153). The median age of patients who died (85, IQR: 68–90) was higher than that of patients who survived (61, IQR: 48–74) (P = 0.002). There was no significant difference between genders in 7- and 30-day mortality (P = 0.668 and P = 0.153, respectively).

Patient outcomes by the Bedside Index of Severity in Acute Pancreatitis Score

Based on the BISAP score, 310 (87%) patients had "mild pancreatitis" and 47 (13%) had "severe pancreatitis." Patients with severe BISAP scores had a significantly higher rate of unfavorable prognostic outcomes than patients with mild scores (63.8% vs. 25.2%, P < 0.001). Similarly, the mortality rate was significantly higher in patients with severe BISAP scores than in patients with mild scores [7-day endpoint: 8.5% vs. 0.3%, P = 0.001; 30-day endpoint: 14.9% vs. 0.3%, P < 0.001, Table 2].

Patient outcomes by the Chinese Simple Scoring System score

Seventy-two percent of the patients had a CSSS score of 0 or 1, and there were no patients with a score of 8 or 9. As the CSSS score increased, the rate of development of unfavorable prognostic factors in patients also increased (P < 0.001). When considering the day 7 and day 30 endpoints, patients who died had higher CSSS scores than those who survived (day 7 P = 0.026 and day 30 P < 0.001). However, none of the patients with a CSSS score of 6 more died [Table 3].

Patient outcomes by the WL score

As the WL score increased, patients were observed to develop more unfavorable prognostic outcomes (P < 0.001). Similarly, as the WL score increased, mortality at both 7 and 30 days increased significantly [P < 0.001 for both, Table 4].

Receiver operating characteristic curves for the WL, Chinese Simple Scoring System, and Bedside Index of Severity in Acute Pancreatitis Scores

ROC curves for the WL, CSSS, and BISAP scores in terms of unfavorable prognostic outcomes are shown in Figure 1. The AUC values were as follows: WL had an AUC of 0.792 (95% confidence interval [CI]: 0.741–0.843), CSSS had an AUC of 0.769 (95% CI: 0.714–0.824), and BISAP had an AUC of 0.731 (95% CI: 0.797–0.788). For the 7th-day outcome, the AUC values were as follows: WL had an AUC of 0.956 (95% CI: 0.913–0.999), CSSS had an AUC of 0.759 (95% CI: 0.504–1.000), and BISAP had an AUC of 0.871 (95% CI: 0.711–1.000). For the 30th-day outcome, the AUC values were as follows: WL had an AUC of 0.941 (95% CI: 0.898–0.984), CSSS had an AUC of 0.823 (95% CI: 0.650–0.997), and BISAP had an AUC of 0.901 (95% CI: 0.711–1.000).

Table 5 shows the presence of unfavorable prognostic criteria, cutoff values for predicting 7- and 30-day outcomes, and calculated percentages for sensitivity and specificity for all three scoring systems.

Discussion

The mortality rate in pancreatitis patients is around 5%.[9] Studies show conflicting results regarding the impact of age on prognosis, with one reporting no association and another indicating a higher mortality rate for patients older than 70.[10,11] In our study, adverse outcomes and mortality were associated with higher median ages, particularly among patients who died.

In our study, similar to Liu *et al*., we found that there were more female patients than males, and there was no significant difference in mortality between genders.[12] The frequency of AP does not differ between genders. However, the distribution of etiological factors varies. Acute biliary pancreatitis is more common in women

Table 2: Relationship between the Bedside Index of Severity in Acute Pancreatitis Score and outcome

	Total, *n* (%)	Unfavorable prognostic factors		7th-day mortality		30th-day mortality	
		Yes, *n* (%)	No, *n* (%)	Death, *n* (%)	Survival, *n* (%)	Death, *n* (%)	Survival, *n* (%)
BISAP severity							
Mild	310 (87)	78 (25.2)	232 (74.8)	1 (0.3)	309 (99.7)	1 (0.3)	339 (99.7)
Severe	47 (13)	30 (63.8)	17 (36.2)	4 (8.5)	43 (91.5)	7 (14.9)	40 (85.1)
*P**		<0.001		0.001		<0.001	
BISAP score							
0	121 (34)	15 (12.4)	106 (87.6)	0	121 (100)	0	121 (100)
1	132 (37)	34 (25.8)	98 (74.2)	1 (0.8)	131 (99.2)	1 (0.8)	131 (99.2)
2	57 (16)	29 (50.9)	28 (49.1)	0	57 (100)	0	57 (100)
3	34 (10)	20 (58.8)	14 (41.2)	2 (5.9)	32 (94.1)	4 (11.8)	30 (88.2)
4	10 (3)	7 (70)	3 (30)	1 (10)	9 (90)	2 (20)	8 (80)
5	3 (1)	3 (100)	0	1 (33.3)	2 (66.7)	1 (33.3)	2 (66.7)
*P**		<0.001		<0.001		<0.001	

*Chi-square test. BISAP: Bedside Index of Severity in Acute Pancreatitis

Table 3: Relationship between the Chinese Simple Scoring System Score and outcome

CSSS Score	Total, *n* (%)	Unfavorable prognostic factors		7th-day mortality		30th-day mortality	
		Yes, *n* (%)	No, *n* (%)	Death, *n* (%)	Survival, *n* (%)	Death, *n* (%)	Survival, *n* (%)
0	145 (41)	129 (89)	16 (11)	1 (0.7)	144 (99.3)	1 (0.7)	144 (99.3)
1	110 (31)	79 (71.8)	31 (28.2)	0	110 (100)	0	110 (100)
2	53 (15)	30 (56.6)	23 (43.4)	1 (1.9)	52 (98.1)	2 (3.8)	51 (96.2)
3	33 (9)	9 (27.3)	24 (72.7)	2 (6.1)	31 (93.9)	2 (6.1)	31 (93.9)
4	7 (2)	2 (28.6)	5 (71.4)	1 (14.3)	6 (85.7)	1 (14.3)	6 (85.7)
5	6 (2)	0	6 (100)	0	6 (100)	2 (33.3)	4 (66.7)
6	1 (0)	0	1 (100)	0	1 (100)	0	1 (100)
7	2 (1)	0	2 (100)	0	2 (100)	0	2 (100)
P*		<0.001		0.026		<0.001	

*Chi-square test. CSSS: Chinese Simple Scoring System

Table 4: Relationship between the WL score and outcome

WL score	Total, *n* (%)	Unfavorable prognostic factors		7th-day mortality		30th-day mortality	
		Yes, *n* (%)	No, *n* (%)	Death, *n* (%)	Survival, *n* (%)	Death, *n* (%)	Survival, *n* (%)
0	75 (21)	4 (5.3)	71 (94.7)	0	75 (100)	0	75 (100)
1	46 (13)	7 (15.2)	39 (84.8)	0	46 (100)	0	46 (100)
2	63 (18)	13 (20.6)	50 (79.4)	0	63 (100)	0	63 (100)
3	52 (15)	13 (25)	39 (75)	0	52 (100)	0	52 (100)
4	35 (10)	15 (42.9)	20 (57.1)	0	35 (100)	0	35 (100)
5	36 (10)	20 (55.6)	16 (44.4)	0	36 (100)	1 (2.8)	35 (97.2)
6	23 (6)	16 (69.6)	7 (30.4)	2 (8.7)	21 (91.3)	2 (8.7)	21 (91.3)
7	16 (4)	10 (62.5)	6 (37.5)	0	16 (100)	2 (12.5)	14 (87.5)
8	3 (1)	2 (66.7)	1 (33.3)	0	3 (100)	0	3 (100)
9	2 (1)	2 (100)	0	0	2 (100)	0	2 (100)
10	2 (1)	2 (100)	0	2 (100)	0	2 (100)	0
11	3 (1)	3 (100)	0	1 (33.3)	2 (66.7)	1 (33.3)	2 (66.7)
12	1 (0)	1 (100)	0	0	1 (100)	0	1 (100)
P		<0.001		<0.001		<0.001	

WL: Wang et al score

due to gallstone prevalence, while alcohol-related pancreatitis is more common in men.[13]

Numerous studies comparing scoring systems for AP can be found in the literature. Wang *et al*. compared the BISAP, Ranson, Acute Physiology and Chronic Health Evaluation (APACHE) II, CSSS, and modified computed tomography severity index (MCTSI) scores based on severity, unfavorable prognosis, and mortality in a study of 585 patients. In terms of mortality, the AUCs for the CSSS, APACHE II, Ranson, BISAP, and MCTSI scores were calculated to be 0.838, 0.844, 0.702, 0.615, and 0.736, respectively. In terms of predicting mortality, the CSSS score was the most successful. When considering the severity and unfavorable prognosis, the AUC was calculated to be 0.834, 0.800, 0.702, 0.570, and 0.660 for the CSSS, APACHE II, Ranson, BISAP, and MCTSI scores, respectively. In predicting severity and unfavorable prognosis, the CSSS score was the most successful.[2]

In a study conducted by Zhou *et al*. with 406 patients included, Ranson, BISAP, Acute Physiology and Chronic Health Evaluation (APACHE) II score, and Sequential Organ Failure Assessment (SOFA) scores were compared in terms of 28-day mortality, severity, and unfavorable prognosis. When considering severe pancreatitis and unfavorable prognosis, the AUC values for SOFA, BISAP, Ranson, and APACHE II were 0.806, 0.841, 0.806, and 0.752, respectively, with the BISAP score being slightly more successful in predicting unfavorable prognosis and severe pancreatitis. When considering 28-day mortality, the AUC values for SOFA, BISAP, Ranson, and APACHE II were 0.968, 0.929, 0.812, and 0.752, respectively, and the SOFA score ranked first in predicting 28-day mortality.[3]

In a study by Zhang *et al*. with 155 patients, mortality, severity, and unfavorable prognosis were compared using the Ranson, BISAP, and APACHE II scores. AUC values for the BISAP, Ranson, and APACHE II were 0.793, 0.903, and 0.836, respectively. The Ranson score outperformed BISAP and APACHE II in predicting unfavorable prognoses and severe pancreatitis. For mortality, AUC values were 0.791, 0.904, and 0.812, with the Ranson score proving more successful.[4]

Our study conducted ROC analysis to evaluate the predictive performance of the WL, CSSS, and BISAP

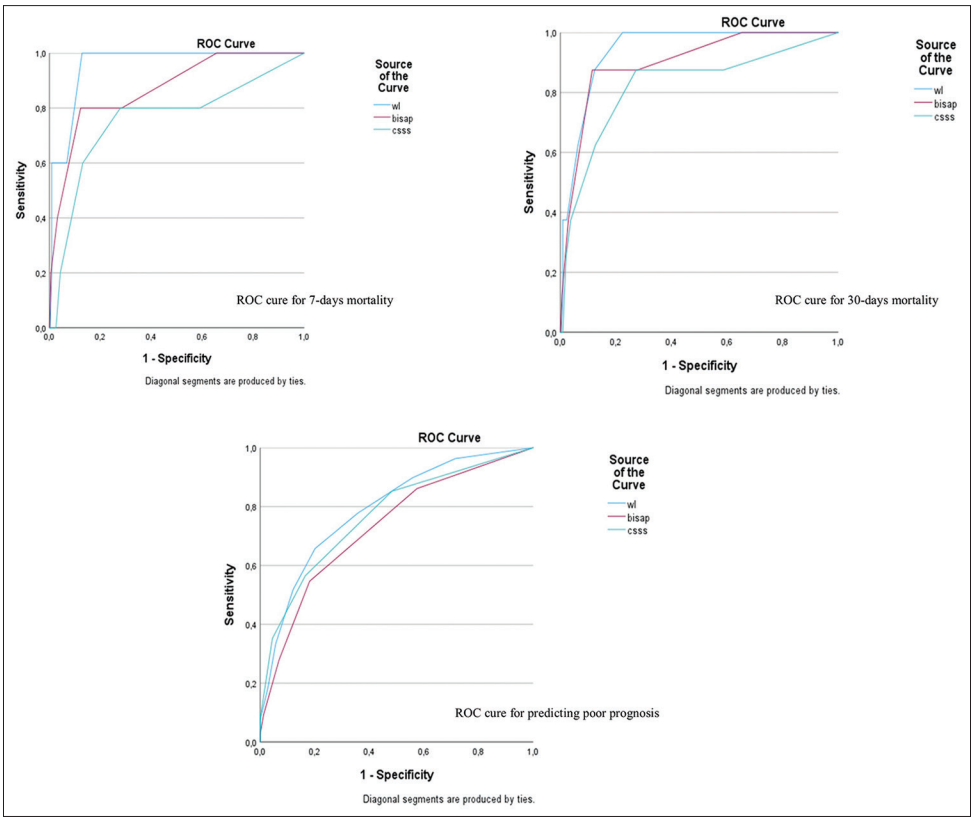

Figure 1: The "receiver operating characteristic curve" for predicting unfavorable prognostic outcomes, 7-day mortality, and 30-day mortality. ROC: Receiver operating characteristic

Table 5: The specificity and sensitivity results according to the cutoff values of scoring systems

	Cut-off value	Sensitivity* (%)	Specificity* (%)
Unfavorable prognostic factors			
WL	5.5	33.3	94.4
	2.5	77.8	64.3
CSSS	1.5	56.5	83.5
	0.5	85.2	51.8
BISAP	2.5	27.8	93.2
	0.5	86.1	42.6
7th-day mortality			
WL	5.5	100	87.2
CSSS	1.5	100	72.2
BISAP	2.5	80	87.8
30th-day mortality			
WL	5.5	87.5	87.7
CSSS	1.5	87.5	72.8
BISAP	2.5	87.5	88.5

*ROC analysis. BISAP: Bedside Index of Severity in Acute Pancreatitis, CSSS: Chinese Simple Scoring System, ROC: Receiver operating characteristic, WL: Wang et al score

scores for 7-day and 30-day mortality as well as unfavorable prognosis. The AUC values obtained were 0.956, 0.759, and 0.871 for WL; 0.941, 0.823, and 0.901 for CSSS; and 0.792, 0.769, and 0.731 for BISAP, respectively. Notably, WL demonstrated superior efficacy in predicting 30-day mortality and the presence of unfavorable prognostic factors compared to CSSS and BISAP.

Wu *et al*. developed the WL score, a new predictive tool for organ damage and mortality in AP. Assessing creatinine, LDH, albumin, and calcium levels within the first 72 h of diagnosis, the score demonstrated high accuracy in predicting mortality (AUC 0.969), transient organ failure (AUC 0.904), and permanent organ failure (AUC 0.893). Low albumin and calcium levels and high creatinine and LDH levels were associated with a more fatal outcome.[7]

The BISAP score is relatively old and has been used in practice for a longer time than the other two scoring systems. It assesses five parameters, including age, BUN, systemic ınflammatory response syndrome criteria, presence of pleural effusion, and altered mental status. The BISAP score includes examination findings, vital signs, laboratory parameters, and imaging results.

In contrast, the WL score is composed solely of laboratory parameters (calcium, albumin, creatinine, and LDH). The CSSS score, on the other hand, considers heart rate, laboratory values (creatinine, blood glucose, CRP, and LDH), and the extent of pancreatic necrosis on computed tomography.

When comparing these scoring systems, it can be argued that the WL score, which considers only four criteria, is more practical for predicting mortality and poor prognosis, especially considering the complexity of scoring systems such as Ranson (11 criteria) and Acute Physiologic Assessment and Chronic Health Evaluation II (APACHE) (13 criteria).

The statistical results of our study show that the WL score is more successful in predicting mortality and poor prognosis than CSSS and BISAP. In addition, it is the scoring system with the fewest parameters. In conclusion, we found that the use of the WL score in emergency departments is easier, faster, and more effective for the short-term prognosis of patients with AP.

Limitations

The study, conducted at a single medical center, may limit generalizability. Its retrospective design, based on hospital records, poses potential biases and the risk of incomplete or incorrect data. Exclusions due to missing imaging and laboratory findings could impact the overall analysis. There is a potential for selection bias if some patients, in better general condition, did not undergo imaging.

Conclusion

In AP patients, the WL, CSSS, and BISAP scores are effective predictors of unfavorable prognosis and mortality. WL score outperforms the CSSS and BISAP scores in predicting 7-day and 30-day mortality and poor prognosis. After WL, BISAP is the second-best system for predicting mortality. For predicting unfavorable prognoses, CSSS is the second-best system after WL. The simplicity of calculating the WL score based on four laboratory parameters makes it a preferable choice.

Authors' contributions

The manuscript has been read and approved by all authors. Conceptualization: YEG, NC, ACO, ST, and MIT, Data curation: YEG, ACO, ST, and MIT, Formal analysis: YEG, NC, and ACO, Investigation: YEG and NC, Methodology: YEG and NC, Project administration: YEG and NC, Supervision: YEG and NC, Roles/Writing – Original draft: YEG, NC, ACO, ST, and MIT, and Writing – Review and editing: YEG, NC, ACO, ST, and MIT.

Conflicts of interest

None declared.

Ethical approval

The study was started after obtaining the permission of the Dokuz Eylul University Faculty of Medicine Clinical Studies Ethics Committee (Decision no: 2022/22-18 Date: 29.06.2022).

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