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Predictive Value of OASIS for Sepsis-associated Acute Kidney Injury: A Retrospective Cohort Study Based on the MIMIC-IV Database

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Abstract: *Sepsis is a life-threatening and critical condition that often leads to multiple organ dysfunction. Among its complications, Sepsis-associated Acute Kidney Injury (SA-AKI) is a prevalent and fatal issue, resulting in numerous deaths worldwide each year. Early assessment of sepsis is crucial for reducing mortality rates. While scoring systems are commonly utilized in the intensive care setting, clinicians often favor simpler and more user-friendly tools. The Oxford Acute Severity of Illness Score (OASIS) provides a rapid evaluation of patient conditions. However, its predictive validity for SA-AKI has not been thoroughly investigated. This study aims to explore the predictive capability of OASIS for the development of SA-AKI in septic patients during hospitalization.*

Keywords: *OASIS, Predictive value, Sepsis, Sepsis-associated acute kidney injury, MIMIC-IV database*

1. Introduction

Sepsis is a critical, life-threatening condition characterized by multiorgan dysfunction resulting from a disturbance in the host's immune response to infection. It is defined by a Sepsis-associated Organ Failure Assessment (SOFA) score of 2 or greater, according to the 2016 Third International Consensus Definition (Sepsis-3)[1]. Despite global efforts in surveillance and treatment, the mortality and fatality rates associated with sepsis remain high[2], primarily due to its propensity to affect distal organs beyond the primary infection site, particularly the kidneys[1]. Sepsis-associated Acute Kidney Injury (SA-AKI) is one of the most prevalent complications of sepsis. Currently, there is no clear, universally accepted definition of SA-AKI; however, a consensus suggests that it involves acute kidney injury (not graded) occurring within seven days of sepsis diagnosis while meeting the diagnostic criteria for both sepsis (as defined by Sepsis-3) and acute kidney injury (as defined by the KDIGO criteria)[3]. According to data from The Lancet, approximately 11 million cases of SA-AKI result in death worldwide each year, equating to one death every 2.8 seconds[3]. Among critically ill patients, approximately 33% of those with sepsis will develop SA-AKI, leading to a 6- to 8-fold increase in mortality[4,5].

The mortality of sepsis patients is strongly linked to disease severity, and early assessment of the disease can significantly reduce mortality[6], particularly concerning associated complications such as SA-AKI. In the field of intensive care medicine, extensive research and development have been conducted on scoring systems that can assess patients' conditions early and predict patient prognosis. Two commonly used scoring systems in the intensive care unit (ICU) are the Sequential Organ Failure Assessment (SOFA) and the Simplified Acute Physiology Score II (SAPS II)[7-9]. However, these systems depend on laboratory and other clinical indicators, which has led clinicians to favor simpler and more user-friendly scoring tools.

The Oxford Acute Severity of Illness Score (OASIS) was developed by Johnson et al. in 2013[10]. This scoring system incorporates various clinical indicators, including age, length of stay prior to ICU admission, heart rate, mean arterial pressure, respiratory rate, body temperature, urine output within the first 24 hours of ICU admission, the presence of mechanical ventilation, and surgical indicators, to

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evaluate the worst clinical values recorded within 24 hours of admission. Scores range from 0 to 75, with a positive correlation between the score and disease severity; higher scores indicate a less favorable prognosis for patients[11]. This assessment method utilizes readily accessible clinical data, eliminating the need for laboratory indicators, thereby facilitating rapid evaluation of the patient's condition. Several studies have shown that OASIS is more effective than SAPS II in assessing the condition and prognosis of critically ill patients[11,12]. While the OASIS is frequently used to evaluate the prognostic impact of sepsis in critically ill patients[13-15], its predictive validity for the development of SA-AKI has not been comprehensively investigated. The objective of this study was to explore the ability of OASIS to predict the onset of SA-AKI during hospitalization in patients with sepsis.

2. Methods

2.1. Data Sources

This retrospective cohort study utilized the Intensive Care Medical Information Database (MIMIC-IV 2.0), developed through a collaboration between the Massachusetts Institute of Technology (MIT), Beth Israel Deaconess Medical Center, and Philips Healthcare. The MIMIC-IV database contains information on over 70,000 critically ill patients treated at the Beth Israel Deaconess Medical Center ICU from 2008 to 2019[16], implementing rigorous de-identification measures to ensure patient privacy and data security. This study adhered to the provisions of the Health Insurance Portability and Accountability Act (HIPAA), permitting researchers to utilize these data for scientific research without necessitating additional ethical review. Following the completion of required training, researchers can log in to the designated website to access all data within the database. Investigator Weixiao Chen has successfully completed an online training course at the National Institutes of Health and obtained authorization to extract data from the MIMIC-IV database for this study (License Number 10311970).

2.2. Study procedures and clinical variables

Data were extracted form both the PostgreSQL(version 14.2.0) and Navivat Premium (version 15.0.12)databases.Patients were required to meet the Sepsis-3 diagnostic criteria,which included a Sequential Organ Failure Assessment(SOFA) score of 2 or more evidence of suspected infection, as well as the Kidney Disease Improving Global Outcome(KDIGO) diagnostic criteria for acute kidney injury(AKI)[5],characterized by increased serum creatinine levels,decreases urine output, and reduced blood creatinine clearance.For patients with sepsis-associated acute kidney injury(SA-AKI),data on length of hospital stay,age,sex.weight and race were collected,along with vital signs and laboratory indicators such as heart rate, temperature hemoglobin,albumin,base excess,platelet and prothrombin levels within 24 hours of ICU admission.Additionally,data from various scoring systems,including the Simplified Acute Physiology Score II(SAPS II),Oxford Acute Severity of Illness Score(OASIS) and SOFA,were collected to document the medical history of conditions such as heart failure,liver disease,diabetes and gastric ulcers.

2.3. The subjects of the study

This study included critically ill patients from the Intensive Care Medical Information Database (MIMIC-IV 2.0), developed by MIT, Beth Israel Deaconess Medical Center, and Philips Healthcare.

The inclusion criteria required that patients meet the sepsis diagnostic criteria defined by Sepsis 3.0 and fulfill the Kidney Disease: Improving Global Outcomes (KDIGO) diagnostic criteria for acute kidney injury (AKI).The exclusion criteria included patients who were not admitted first to the ICU, those with missing critical data, and patients whose length of stay was less than 48 hours.

2.4. Missing Data Processing

Missing values are a prevalent issue in the MIMIC-IV database, and the complete exclusion of incomplete data may introduce bias into the study. During the data preprocessing phase, missing values for the selected variables were systematically addressed. Variables exhibiting more than 5% missing values were excluded, whereas the K-nearest neighbor (KNN) interpolation method was employed to replace missing values that constituted less than 5%.

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2.5. Patient and Public Participation

This study did not directly involve patients or the general public.

2.6. Statistical analysis

Statistical analysis was performed via R software version 4.2. Categorical variables are reported as frequencies and percentages, with comparisons made via the chi-square test. Continuous variables with a normal distribution are expressed as the mean±standard deviation (SD), whereas those with a skewed distribution are represented as the median (with interquartile range, IQR), and comparisons were conducted via the Kruskal–Wallis test. Multiple logistic regression analysis was used to investigate the associations between the OASIS score and risk factors for sepsis-associated acute kidney injury (SA-AKI) within a 7-day window. Variables with a univariate P value of less than 0.05 were selected for inclusion in the multivariate analysis. The ability of the OASIS score to predict SA-AKI was evaluated via receiver operating characteristic (ROC) curves, and its performance was compared with that of the SOFA and SAPS II scoring systems. Additionally, the enhancement of the diagnostic yield of the standalone OASIS model through the integration of potassium levels and activated partial thromboplastin time (APTT) was explored. The optimal cutoff values for these scoring systems were determined by calculating the Youden index, and the corresponding sensitivity and specificity rates were computed. All analyses were considered statistically significant at $P < 0.05$, indicating that the results were highly significant.

3. Results

3.1. The subjects were included in the procedure.

Within the MIMIC-IV 2.0 database, there were a total of 76,943 ICU patients. Of these, 35,010 patients met the diagnostic criteria for sepsis 3.0. The 26,820 patients with adult sepsis in the ICU were excluded for reasons such as being under 18 years old, having missing key data, or having a hospitalization time of less than 48 hours,shown in Figure 1.

3.2. Basic characteristics of the subjects.

Among the 8,190 adult patients with sepsis, 6,288 developed sepsis-associated acute kidney injury (SA-AKI) within 7 days, whereas 1,902 did not. The overall incidence of SA-AKI was 76.8%. Significant differences in parameters such as hospitalization days, age, weight, temperature, respiration, heart rate, urine volume, leukocyte count, creatinine, blood urea nitrogen, potassium ion, base excess, OASIS, SOFA, and SAPS II were detected between the two groups. These differences were statistically significant ($p < 0.05$),shown in Table 1.

3.3. Association between OASIS and SA-AKI development within 7 days of hospitalization.

3.3.1. Univariate and multivariate logistic regression analyses.

The study aimed to identify independent risk factors for sepsis-associated acute kidney injury(SA-AKI) within 7 days 8,190 sepsis patients.Various demographic and clinical variables,including age,weight,vital signs,laboratory parameters,comorbidities and disease severity score,were analyzed as independent variables.Multivariate logistic regression analysis revealed that weight,urine volume,creatinine,prothrombin time(PT),activated partial thromboplastin time(APTT), total bilirubin,partial pressure of oxygen(PO2),albumin,congestive heart failure,AIDS,the Oxford Acute Severity of Illness Score(OASIS) and the Simplified Acute Physiology Score II(SAPS II) were significant risk factors for AKI within 7 days($p < 0.05$),shown in Tables 2-3.

3.3.2. Predictive value of the ROC curve analysis of OASIS for the development of SA-AKI within 7 days in sepsis patients.

The AUC of the model is 0.738 (95% CI: 0.725, 0.750), suggesting that the predictive model has some discriminative ability. On the basis of the basis of the Youden index, the optimal cutoff value for OASIS is 0.766. The sensitivity and specificity of predicting the development of SA-AKI within 7 days in sepsis patients were 0.699 and 0.664, respectively,shown in Figure 2.

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3.3.3. ROC curves assessing the ability of OASIS combined with potassium and APTT to predict the risk of SA-AKI within 7 days in patients with sepsis.

The AUC for OASIS in conjunction with potassium levels and activated partial thromboplastin time (APTT) was 0.756 (95% CI: 0.744, 0.768), suggesting that the combined model yielded improved performance compared with the model based solely on OASIS. The Youden index was 0.388, and the model predicted that the sensitivity and specificity for detecting SA-AKI within 7 days were 0.693 and 0.694, respectively,shown in Figure 3.

3.3.4. ROC curve analysis was used to assess the predictive value of various scoring systems for the onset of SA-AKI within seven days in patients who underwent surgery.

The OASIS achieved an area under the curve (AUC) of 0.738 for predicting SA-AKI (95% confidence interval: [0.725–0.750]), suggesting enhanced predictive performance relative to the SOFA (AUC 0.716, 95% confidence interval: [0.703–0.729]) and the SAPS II (AUC 0.703, 95% confidence interval: [0.689–0.716]). The OASIS, SOFA and SAPS II scores were statistically significant, with p values less than 0.001,shown in Figure 4 and Table 3.

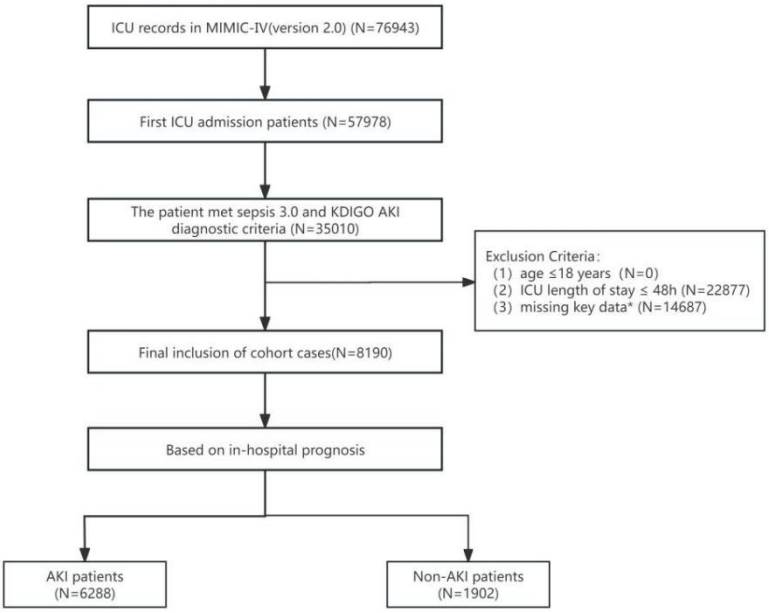

Figure 1 Study population inclusion process.

Abbreviations: ICU, intensive care unit; MIMIC-IV, Medical Information Mart for Intensive Care-IV; AKI, acute kidney injury; Non-AKI, absence or lack of acute kidney injury, SA-AKI, Sepsis-associated Acute Kidney Injury.

Missing Key Data*: height, dialysis present, dialysis active, dialysis type, globulin, total protein, sugars, bands, monocyte, bacteria, d-dimer, fibrinogen, thrombin, amylase, bilirubin direct, bilirubin indirect, ck-mb, creatine kinase, lactate dehydrogenase, lactate, sulfur dioxide, A-aDO2, PaO2/FiO2, bicarb, carboxyhemoglobin, methemoglobin

Table 1: General situation information sheet.

Parameter	Total(8190)	AKI(6288)	Non-AKI(1902)	F/x2/U	P
Hospital day	6.0 ± 8.4	6.9 ± 9.1	3.1 ± 4.3	317.505	< 0.001
Age(years)	65.6 ± 16.1	66.3 ± 15.7	63.2 ± 17.2	57.88	< 0.001
Sex (male/%)	4691 (57.3)	3637(57.8)	1054(55.4)	3.509	0.061
Weight(kg)	82.25 ± 26.24	84.60 ± 27.22	74.48 ± 20.91	222.924	< 0.001
Temperature(°C)	36.89 ± 0.66	36.88 ± 0.68	36.94 ± 0.57	14.699	< 0.001
Heart rate(beats/min)	90.20 ± 17.42	90.52 ± 17.72	89.17 ± 16.36	8.781	0.003
Respire(insp/min)	20.6 ± 4.4	20.7 ± 4.4	20.2 ± 4.4	19.613	< 0.001
Urine volume(ml)	1652.8±1407.6	1448.5 ± 1272.1	2328.5± 1608.8	613.519	< 0.001
WBC(K/uL)	14.0 ± 11.4	14.2 ± 11.2	13.4 ± 11.7	7.357	0.007
PLT(K/uL)	202.9 ± 122.0	202.6 ± 123.0	203.9 ± 118.7	0.154	0.695
Cr(mg/dL)	1.9 ± 1.9	2.1 ± 2.0	1.5 ± 1.4	149.223	< 0.001
BUN(mg/dl)	35.6 ± 26.4	37.0 ± 26.2	31.0 ± 26.5	76.365	< 0.001

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potassium (mEq/L)	4.4 ± 0.7	4.4 ± 0.8	4.2 ± 0.7	95.367	< 0.001
Natrium(mEq/L)	138.1 ± 5.9	138.1 ± 5.9	138.3 ± 6.0	2.899	0.089
BE(mmol/l)	-2.5 ± 5.7	-2.7 ± 5.8	-1.7 ± 5.3	43.71	< 0.001
Calcium(mg/dl)	8.2 ± 0.9	8.2 ± 0.9	8.2 ± 0.8	0.355	0.551
OASIS	37.0(31.0,44.0)	39.0 (33.0, 46.0)	31.0(26.0,37.0)	990.398	< 0.001
SOFA	8.0 (5.0, 11.0)	8.0 (6.0, 12.0)	5.0 (4.0, 8.0)	822.259	< 0.001
SAPSII	44.23 ± 15.32	46.61 ± 15.19	36.35 ± 12.96	711.206	< 0.001

Notes: WBC, leukocyte count; PLT, platelets; Cr, creatinine; BUN, blood urea nitrogen; BE, base excess; OASIS, Oxford Acute Severity of Illness Score; SOFA, Sepsis-related Organ Failure Assessment Score; SAPS II, simplified acute physiology score II.

Table 2 Results of univariate logistic regression analysis of OASIS and SA-AKI within 7 days.

Factor	OR	95%CI	P value	Factor	OR	95%CI	P value
Age(years)	1.01	(1.01~1.02)	<0.001	AST(IU/L)	1	(1~1)	<0.001
Weight(kg)	1.02	(1.02~1.02)	<0.001	Total bilirubin (mg/dl)	1.08	(1.06~1.1)	<0.001
Temperature(°C)	0.86	(0.79~0.93)	<0.001	potassium (mEq/L)	1.44	(1.34~1.55)	<0.001
Heart rate(beats/min)	1	(1~1.01)	0.003	Monocyte(K/uL)	1	(1~1)	0.018
Respire(insp/min)	1.03	(1.02~1.04)	<0.001	Neutrophile granulocyte(K/uL)	1	(1~1)	0.004
Urine volume(ml)	1	(1~1)	<0.001	Creatinine(mg/dl)	1.31	(1.25~1.36)	<0.001
Hemoglobin(g/dl)	0.97	(0.94~0.99)	0.004	Kidney disease	1.7	(1.51~1.93)	<0.001
Albumin(g/l)	0.68	(0.63~0.74)	<0.001	AIDS	0.44	(0.29~0.65)	<0.001
AG(mEq/L)	1.06	(1.05~1.07)	<0.001	Myocardial infarction	1.53	(1.32~1.76)	<0.001
PH(units)	0.04	(0.02~0.07)	<0.001	Congestive heart-failure	1.95	(1.74~2.19)	<0.001
BE(mmol/l)	0.97	(0.96~0.98)	<0.001	Peripheral vascular disease	1.33	(1.12~1.57)	0.001
PO2(mmHg)	1	(1~1)	<0.001	CVD	1.23	(1.05~1.45)	0.01
INR	1.34	(1.25~1.44)	<0.001	Hepatic adipose infiltration	1.39	(1.22~1.58)	<0.001
PT(sec)	1.03	(1.02~1.03)	<0.001	SOFA	1.25	(1.23~1.27)	<0.001
APTT(sec)	1.02	(1.02~1.02)	<0.001	OASIS	1.11	(1.1~1.11)	<0.001
ALT(IU/L)	1	(1~1)	<0.001	SAPS II	1.06	(1.05~1.06)	<0.001

Notes: AG, anion gap; Diabetes with cc, diabetes with complications; Diabetes without cc, diabetes without complications or comorbidities; PH, potential of hydrogen; BE, base excess; PO2, partial pressure of oxygen; INR, international normalized ratio; APTT, activated partial thromboplastin time; PT, prothrombin time; ALT, alanine aminotransferase; AST, aspartate aminotransferase; CVD, cerebrovascular disease; AIDS, acquired immunodeficiency syndrome; OASIS, Oxford Acute Severity of Illness Score; SAE II, simplified acute physiology score II; SOFA, Sepsis-related Organ Failure Assessment score; SA-AKI, sepsis-associated acute kidney injury.

Table 3 Results of the multivariate logistic regression of OASIS and SA-AKI.

Factor	OR	95%CI	P value	Factor	OR	95%CI	P value
Weight(kg)	1.02	(1.02~1.03)	<0.001	PO2(mmHg)	1	(1~1)	0.007
Urine volume(ml)	1	(1~1)	<0.001	Albumin(g/dL)	0.81	(0.73~0.91)	<0.001
Creatinine(mg/dl)	1.17	(1.11~1.24)	<0.001	AIDS	0.5	(0.31~0.82)	0.006
PT(sec)	0.98	(0.96~1)	0.042	Congestive heart-failure	1.42	(1.1~1.85)	0.007
APTT(sec)	1.01	(1.01~1.02)	<0.001	OASIS	1.06	(1.05~1.08)	<0.001
Total bilirubin(mg/dl)	1.03	(1~1.05)	0.027	SAPS II	1.02	(1.01~1.02)	<0.001

Notes: APTT, activated partial thromboplastin time; PT, prothrombin time; PO2, partial pressure of oxygen; AIDS, acquired immunodeficiency syndrome; OASIS, Oxford Acute Severity of Illness Scale; SAPS II, simplified acute physiology score II; SA-AKI, sepsis-associated acute kidney injury.

Table 4 The predictive value of various scoring systems for SA-AKI.

Factor	AUC	95%CI	P value	The best cut off value	sensitivity(%)	specificity(%)	Youden
OASIS	0.738	0.725-0.750	＜0.001	0.766	0.699	0.664	0.363
SAPS II	0.703	0.690-0.716	＜0.001	0.628	0.301	0.681	0.309
SOFA	0.716	0.690-0.716	＜0.001	0.683	0.365	0.635	0.318
OASIS+potassium +APTT	0.756	0.744-0.768	＜0.001	0.751	0.693	0.699	0.388

Notes: OASIS, Oxford Acute Severity of Illness Scale; SAPS II, simplified acute physiology score II; SOFA, Sepsis-related Organ Failure Assessment score; SA-AKI, sepsis-associated acute kidney injury.

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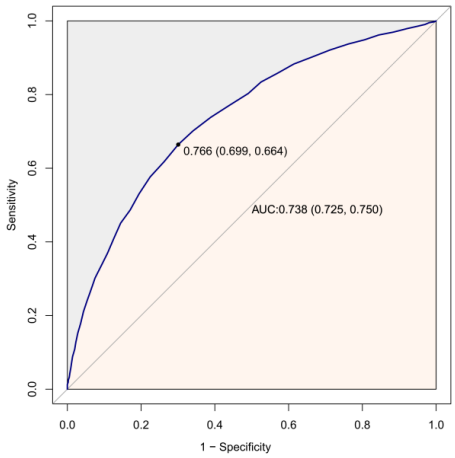

Figure 2 ROC curve analysis was used to evaluate the predictive value of OASIS for the development of SA-AKI within 7 days in septic patients.

Abbreviations: ROC, receiver operating characteristic; AKI, acute kidney injury; OASIS, the Oxford Acute Severity of Illness Score; SA-AKI, sepsis-associated acute kidney injury; AUC, area under the ROC curve; CI, confidence interval.

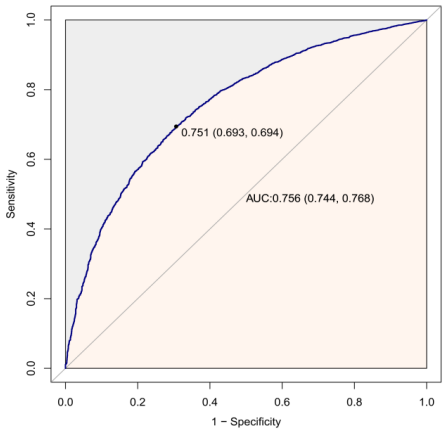

Figure 3 ROC curve analysis was used to evaluate the predictive value of OASIS combined with potassium and APTT for the development of SA-AKI within 7 days in septic patients.

Abbreviations: ROC, receiver operating characteristic; AKI, acute kidney injury; OASIS, the Oxford Acute Severity of Illness Score; APTT, activated partial thromboplastin time; SA-AKI, sepsis-associated acute kidney injury; AUC, area under the ROC curve; CI, confidence interval.

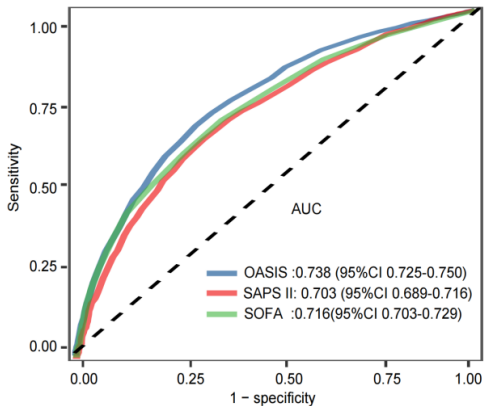

Figure 4 ROC curve analysis of OASIS, SAPS II and SOFA scores during ICU hospitalization was performed to assess their predictive power for the outcome of SA-AKI in sepsis patients during hospitalization.

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Abbreviations: ROC, receiver operating characteristic; ICU, intensive care unit; SAPS II, simplified acute physiology score II; SOFA, Sepsis-related Organ Failure Assessment; OASIS, Oxford Acute Severity of Illness Scale; SA-AKI, sepsis-associated acute kidney injury; AUC, area under the ROC curve; CI, confidence interval.

4. Discussion

Sepsis is a serious condition that typically arises from the body's abnormal response to an infection, leading to organ dysfunction. More than half of patients with sepsis will develop sepsis-associated acute kidney injury (SA-AKI), and approximately 40% of these cases will worsen, adversely affecting patient outcomes[17,18]. Therefore, accurately detecting the incidence of SA-AKI is essential for improving treatment effectiveness and reducing mortality rates[19,20].

In the field of critical care medicine, scoring systems are crucial for the early assessment of disease progression and the prediction of patient outcomes[21-23]. The Sequential Organ Failure Assessment (SOFA) is particularly regarded as the preferred tool for estimating the mortality rate in patients with sepsis, providing highly accurate predictions[24,25]. However, receiver operating characteristic (ROC) curve analysis indicated that, compared with the OASIS system, the SOFA score was inadequate for predicting the development of SA-AKI in septic patients during hospitalization. This finding implies that the SOFA score may not be the most suitable option for predicting the likelihood of developing SA-AKI concurrently with sepsis during an inpatient stay.

The OASIS, developed by Johnson AE et al. in 2013[10], is a novel disease assessment scale that incorporates ten key indicators for evaluation, including age, duration of ICU stay prior to admission, temperature, heart rate, mean arterial pressure, respiratory rate, GCS score, urine volume, and the first 24 hours of hospitalization. This scale is designed to assess a patient's condition within the first 24 hours of ICU admission and has been rigorously validated to demonstrate its efficacy in evaluating the immediate status of critically ill patients and forecasting their subsequent prognosis. An increased OASIS score indicates a more critical patient condition and a poorer expected outcome. Numerous studies have shown that OASIS outperforms the SOFA and SPAS II in predicting sepsis in critically ill patients[12,26]. Furthermore, acute kidney injury during the progression of sepsis significantly elevates mortality rates and adversely affects long-term patient outcomes. The current findings support this conclusion and specifically highlight the practical utility of OASIS in predicting sepsis-associated acute kidney injury.

This study analyzed the clinical data of 8,190 septic patients from a large American public database, providing a robust sample size. Compared with other scoring systems, such as the SOFA and SAPS II, the OASIS scoring systems demonstrated superior performance in predicting SA-AKI, a finding corroborated by Wang et al.[11]. Physicians favor the OASIS model because of its simplicity, independence from laboratory testing, and straightforward application in clinical settings. While the OASIS model is employed for predicting SA-AKI, research indicates that the complex pathophysiology of sepsis leads to a significant elevation in inflammatory factor levels in patients, along with disturbances in coagulation function and microcirculation. Furthermore, both APTT and potassium levels are recognized as important predictors in the diagnosis of AKI[27,28]. This study enhances the OASIS model by incorporating potassium levels, APTT, and other pertinent indicators, demonstrating that this approach significantly improves the model's predictive ability. Consequently, medical practitioners are advised to utilize the OASIS scoring system within the first 24 hours of a patient's hospital admission and to monitor their blood potassium levels and activated partial thromboplastin time (APTT). This approach is anticipated to increase the accuracy of predicting the onset of SA-AKI and promote the adoption of preventive strategies aimed at mitigating the risk of illness.

OASIS, while a valuable predictor of SA-AKI, should be regarded as an assessment tool rather than a standalone diagnostic criterion. The onset and progression of AKI are influenced by multiple factors, including the patient's prior health status, age, and any comorbidities. Therefore, it is essential to supplement OASIS data with additional clinical information and to utilize the expertise of healthcare providers. This integrated approach enhances the accuracy of predictions and supports well-informed decision-making. While the OASIS model, which incorporates potassium levels and APTT, provides certain insights, factors such as patient racial variation and the presence of comorbid conditions may affect the precision of the predictive model. Furthermore, as the current research is based on a retrospective design, future studies employing a prospective approach could be conducted to more thoroughly validate the utility of the OASIS scoring system for forecasting SA-AKI.

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5. Conclusion

The OASIS scoring system is designed to evaluate organ dysfunction and the severity of infection in patients with sepsis and plays a crucial role in predicting sepsis-related acute kidney injury. Its ability to assess disease severity and organ function enables medical professionals to promptly identify high-risk patients and implement appropriate therapeutic interventions. Furthermore, monitoring changes in OASIS facilitates the evaluation of treatment efficacy and the prediction of patient outcomes. However, it is important to emphasize that OASIS scores should be used in conjunction with other clinical data and interpreted by healthcare providers to ensure accurate predictions and support informed decision-making.

6. Limitations

This study conducted a retrospective review utilizing the MIMIC-IV 2.0 database. However, it is essential to acknowledge several limitations. First, the data are subject to inherent selection bias. Second, the integrity of data in public databases may be compromised due to issues such as missing data, recording errors, and measurement inaccuracies, which could lead to information loss or distortions. Finally, the patient sample in the database is limited to a single healthcare facility in the United States, potentially restricting the generalizability of the findings to patients from other regions or those with diverse ethnic and cultural backgrounds.

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