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ORIGINAL ARTICLE

Prognostic value of the nutritional inflammatory score in NSTEMI: A decade of follow-up

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Abstract

To evaluate the prognostic value of the Nutritional Inflammatory Score (NIS) and neutrophil-to-lymphocyte ratio (NLR) in predicting long-term major adverse cardiovascular events (MACE) and all-cause mortality in patients with non-ST segment elevation myocardial infarction (NSTEMI). This retrospective cohort study included 314 patients with NSTEMI who were admitted between 2013 and 2016. Baseline NIS (calculated as albumin/NLR) and NLR values were obtained from admission laboratory data. The primary outcome was MACE, defined as a composite of cardiovascular death, recurrent myocardial infarction, heart failure hospitalization, and repeat revascularization. The secondary outcome was all-cause mortality. Patients were followed for a mean of 99.7 ± 22.0 months. Cox regression analysis, receiver operating characteristic (ROC) curves, and Kaplan-Meier survival estimates were used to assess prognostic significance. Multivariate Cox regression showed that NIS was an independent predictor of both MACE (HR: 0.719, 95% CI: 0.631–0.819, $p<0.001$) and all-cause mortality (HR: 0.885, 95% CI: 0.788–0.994, $p=0.040$). NLR was predictive of MACE but not mortality. NIS demonstrated superior predictive performance (AUC: 0.886 for MACE; 0.799 for mortality). Kaplan-Meier analysis showed significantly higher event and mortality rates in patients with lower NIS values. NIS, a simple and readily accessible marker that integrates inflammatory and nutritional status, is a strong independent predictor of long-term outcomes in NSTEMI patients. It outperforms NLR and may enhance clinical risk stratification and personalized patient management.

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Abbreviations: AUC, Area under the curve; CI, Confidence interval; DM, Diabetes mellitus; HR, Hazard ratio; HT, Hypertension; LVEF, Left ventricular ejection fraction; MACE, Major adverse cardiovascular events; NIS, Nutritional Inflammatory Score; NLR, Neutrophil-to-lymphocyte ratio; NSTEMI, Non-ST segment elevation myocardial infarction; PCI, Percutaneous coronary intervention; ROC, Receiver operating characteristic; TTE, Transthoracic echocardiography; VIF, Variance inflation factor.

Introduction

Non-ST segment elevation myocardial infarction (NSTEMI) represents a common and clinically significant form of acute coronary syndrome, and despite advances in contemporary treatment strategies, it remains associated with considerable morbidity and mortality [1]. Although percutaneous coronary intervention (PCI) and modern antithrombotic therapies have improved short-term outcomes, long-term prognosis remains heterogeneous, underscoring the need for reliable early risk stratification.

Recent guidelines and clinical studies emphasize that the timing of revascularization in NSTEMI patients should be guided by individual risk profiles [2-4]. Accordingly, rapid, reliable, and easily applicable risk assessment tools have become increasingly important in clinical decision-making. In this context, hematological indices derived from routine laboratory parameters offer practical value in supporting time-sensitive interventions at the bedside.

The central role of inflammation in the development and progression of atherosclerosis and acute coronary events has been well established [5]. Similarly, nutritional status is known to modulate immune function and influence cardiovascular outcomes [6,7]. Several studies have demonstrated that composite biomarkers reflecting both inflammatory burden and nutritional reserve provide enhanced prognostic power across a range of diseases [8-11]. Among them, the neutrophil-to-lymphocyte ratio (NLR) is one of the most widely used inflammation-based indices [12]. In our study, we evaluated a novel parameter by incorporating serum albumin levels into this model, defining the albumin/NLR ratio as the Nutritional Inflammatory Score (NIS).

These indices are unaffected by antithrombotic treatments or fasting status, making them particularly advantageous in acute care settings [13]. While previous research has primarily focused on their short-term prognostic relevance, our study uniquely provides insight into their long-term predictive value [14,15]. However, there is a paucity of data regarding long-term prognostic indicators that simultaneously capture inflammatory and nutritional status in the NSTEMI population. With approximately 10 years of follow-up, we aimed to assess the relationship between admission NLR and NIS values and major adverse cardiovascular events (MACE) as well as all-cause mortality, thereby offering a robust contribution to the existing literature. In our study, MACE was defined as a composite of cardiovascular death, recurrent myocardial infarction, heart failure hospitalization, and repeat revascularization procedures occurring during follow-up.

Materials and Methods

Study population and ethical approval

This retrospective cohort study included a total of 314 patients diagnosed with non-ST segment elevation myocardial infarction (NSTEMI), identified through a screening process completed in February 2025. These patients were initially admitted to our institution between 01 January 2013 and 31 December 2016. The diagnosis of NSTEMI was established according to contemporary guidelines, based on clinical presentation, electrocardiographic changes, and elevated cardiac biomarkers at admission. Patients aged ≥18 years who were hospitalized with a confirmed diagnosis of NSTEMI and had complete baseline laboratory data available were eligible for inclusion.

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To minimize potential confounding, the following exclusion criteria were applied: patients with active infection, systemic inflammatory or autoimmune diseases, ongoing corticosteroid or immunosuppressive therapy, malignancy, advanced liver disease (Child-Pugh class B or C), end-stage renal disease (eGFR <15 mL/min/1.73 m² or requiring dialysis), or any acute systemic illness at admission were excluded from the analysis.

The study protocol was approved by the Institutional Ethics Committee of Gazi University (Approval No: 2025-185, Date: 28.01.2025). All procedures were conducted in accordance with the principles outlined in the Declaration of Helsinki.

Data collection and follow-up

Demographic characteristics, baseline laboratory findings (including complete blood count and biochemical parameters), comorbidities such as hypertension and diabetes mellitus, and left ventricular ejection fraction (LVEF) measurements obtained via transthoracic echocardiography (TTE) were recorded. LVEF values were primarily derived from TTE assessments performed within the first three months following the index hospitalization. Long-term follow-up data were collected through hospital electronic medical records, the national e-Nabız health information system, and direct contact with patients or their relatives when necessary. Although detailed procedural data were not uniformly available, the majority of patients underwent coronary angiography and received guideline-directed medical therapy according to contemporary NSTEMI management protocols. The mean follow-up duration was calculated as 99.7 ± 22.0 months, ranging from 11 to 134 months.

Definition of biomarkers

Two primary indices were evaluated in this study: the neutrophil-to-lymphocyte ratio (NLR) and the albumin-to-NLR ratio, referred to as the Nutritional Inflammatory Score (NIS). Both parameters were calculated using laboratory values obtained within the first 24 hours of hospital admission.

Clinical outcomes

The primary outcome of the study was the occurrence of major adverse cardiovascular events (MACE), defined as a composite of cardiovascular death, recurrent myocardial infarction, hospitalization due to heart failure, and repeat revascularization procedures occurring during follow-up. The secondary outcome was all-cause mortality during the follow-up period.

Statistical analysis

All statistical analyses were performed using IBM SPSS Statistics version 25.0 (IBM Corp., Armonk, NY, USA). The distribution of continuous variables was assessed using histograms, Q-Q plots, and the Shapiro-Wilk test. Normally distributed continuous variables were presented as mean ± standard deviation (SD), while categorical variables were expressed as frequencies and percentages.

Comparisons between groups were performed using the independent samples t-test for continuous variables and the chi-square test for categorical variables. The prognostic impact of clinical and laboratory parameters on major adverse cardiovascular events (MACE) and all-cause mortality was evaluated using univariate and multivariate Cox proportional hazards regression analyses. Variables with a *p*-value <0.10 in univariate analysis were included in the multivariate models. Results were expressed as hazard ratios (HR) with 95% confidence intervals (CI).

The predictive performance of the NIS for MACE and all-cause mortality was assessed by receiver operating characteristic (ROC) curve analysis. Due to the inverse association of NIS values with adverse outcomes, ROC analysis was performed using the inverse form of NIS to provide an accurate reflection of its prognostic performance, as higher inverse values more intuitively represent higher

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risk. The area under the curve (AUC) was calculated to quantify discriminatory ability, and optimal cut-off values were determined based on the Youden index. Survival curves were generated using the Kaplan-Meier method, and differences between groups were compared using the log-rank test.

A two-tailed p-value of <0.05 was considered statistically significant.

To avoid potential multicollinearity due to the mathematical relationship between NIS and NLR, these variables were not included in the same multivariate Cox regression model. Instead, their prognostic values were assessed separately in distinct models. In an alternative approach, when both variables were included simultaneously, collinearity diagnostics (including variance inflation factor, VIF) were examined and found to be within acceptable limits (VIF < 2.5), indicating no significant collinearity.

Results

A total of 314 patients with NSTEMI were included in this study. The mean age was 62.74 ± 9.89 years, and 105 patients (33.4%) were female. The prevalence of hypertension and diabetes mellitus was 69.1% and 34.4%, respectively. The mean left ventricular ejection fraction (LVEF) was 46.62 ± 12.35%. Baseline NLR and NIS were calculated as 4.46 ± 2.75 and 3.59 ± 2.13, respectively. The mean follow-up duration was 99.7 ± 22.0 months (range: 11–134 months) (Table 1).

Table 1. Baseline clinical characteristics of the study population (n=314).

Variables	Value
Age (years)	62.74±9.89
Follow-up duration (months)	99.7±22.0
Female, n (%)	105 (33.4%)
Hypertension, n (%)	217 (69.1%)
Diabetes Mellitus, n (%)	108 (34.4%)
Left Ventricular Ejection Fraction (%)	46.62±12.35
Neutrophil-to-Lymphocyte Ratio (NLR)	4.46±2.75
Nutritional Inflammatory Score (NIS)	3.59±2.13
MACE, n (%)	152 (48.4%)
Cardiovascular Death, n (%)	83 (26.4%)
Recurrent Myocardial Infarction, n (%)	77 (24.5%)
Revascularization, n (%)	105 (33.4%)
Heart Failure Hospitalization, n (%)	118 (37.6%)
All-cause Mortality, n (%)	148 (47.1%)

Baseline demographic, clinical, and laboratory characteristics of the study population are presented. Continuous variables are expressed as mean ± standard deviation, and categorical variables as counts and percentages.

During follow-up, major adverse cardiovascular events (MACE) occurred in 152 patients (48.4%). Cardiovascular death was observed in 83 patients (26.4%), recurrent myocardial infarction in 77 patients (24.5%), heart failure hospitalization in 118 patients (37.6%), and repeat revascularization procedures in 105 patients (33.4%). All-cause mortality was recorded in 148 patients (47.1%).

Patients with MACE were significantly older compared to those without MACE (65.89 ± 10.96 vs. 59.78 ± 7.70 years, p<0.001), had higher NLR values (5.78 ± 2.85 vs. 3.22 ± 1.98, p<0.001), and

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lower LVEF (40.15 ± 11.68% vs. 52.70 ± 9.60%, p<0.001). NIS values were significantly lower in the MACE group (2.16 ± 1.04 vs. 4.93 ± 2.02, p<0.001). No significant differences were observed regarding sex, diabetes mellitus, or hypertension prevalence (Table 2).

Table 2. Comparison of clinical and laboratory variables between patients with and without Major Adverse Cardiovascular Events (MACE).

Variables	MACE(+) (n=152)	MACE(–) (n=162)	*p*-value
Age (years)	65.89±10.96	59.78±7.70	< 0.001
Female, n (%)	52 (34.2%)	53 (32.7%)	0.796
Diabetes Mellitus, n (%)	59 (38.8%)	49 (30.2%)	0.113
Hypertension, n (%)	103 (67.8%)	114 (70.4%)	0.616
Left Ventricular Ejection Fraction (%)	40.15±11.68	52.70±9.60	< 0.001
Neutrophil-to-Lymphocyte Ratio (NLR)	5.78±2.85	3.22±1.98	< 0.001
Nutritional Inflammatory Score (NIS)	2.16±1.04	4.93±2.02	< 0.001

Clinical and laboratory characteristics of patients were compared according to the occurrence of major adverse cardiovascular events (MACE) during follow-up. Continuous variables are presented as mean ± standard deviation, and categorical variables are expressed as counts and percentages.

The comparison of baseline clinical and laboratory characteristics between patients with and without all-cause mortality is presented in Supplementary Table S1.

In univariate Cox regression analysis, age, NLR, NIS, and LVEF were significant predictors of MACE. In the multivariate model, NIS (HR: 0.719, 95% CI: 0.631–0.819, p<0.001), age (HR: 1.021, 95% CI: 1.0

05–1.038, p=0.008), NLR (HR: 1.098, 95% CI: 1.031–1.169, p=0.004), and LVEF (HR: 0.980, 95% CI: 0.966–0.994, p=0.006) remained independent predictors of MACE (Table 3).

Table 3. Univariate and multivariate cox regression analysis for Major Adverse Cardiovascular Events (MACE).

Variables	B	*p* value	95% CI		β*	*p* value	95% CI	
			Lower	Upper			Lower	Upper
Age	0.048	< 0.001	1.033	1.065	0.021	0.008	1.005	1.038
Female	0.026	0.880	0.733	1.436	—	—	—	—
DM	0.194	0.247	0.847	1.686	—	—	—	—
HT	-0.070	0.686	0.663	1.311	—	—	—	—
LVEF	-0.048	< 0.001	0.940	0.966	-0.020	0.006	0.966	0.994
NLR	0.200	< 0.001	1.153	1.294	0.093	0.004	1.031	1.169
NIS	-0.429	< 0.001	0.576	0.736	-0.330	< 0.001	0.631	0.819

Univariate Cox proportional hazards regression analysis was performed to evaluate the association between potential predictors and MACE. Variables with a p-value <0.10 in univariate analysis were subsequently included in the multivariate Cox regression model to identify independent predictors. Hazard ratios (Exp(B)) with 95% confidence intervals (CI) are presented along with regression coefficients (β) from the multivariate model.*

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NLR: Neutrophil-to-Lymphocyte Ratio; LVEF: Left Ventricular Ejection Fraction; NIS: Nutritional Inflammatory Score; DM: Diabetes Mellitus; HT: Hypertension; B: regression coefficient; Exp(B): hazard ratio; CI: Confidence Interval.

For detailed multivariate Cox regression analyses of individual MACE components, including heart failure hospitalization, cardiovascular death, revascularization, and recurrent myocardial infarction, please refer to Supplementary Table S2.

Regarding all-cause mortality, univariate analysis identified age, NLR, NIS, and LVEF as significant predictors. However, in the multivariate analysis, only age (HR: 1.052, 95% CI: 1.036–1.069, p<0.001) and NIS (HR: 0.885, 95% CI: 0.788–0.994, p=0.040) remained independently associated with mortality. Both NLR and LVEF lost their statistical significance in the multivariate model (Table 4).

Table 4. Univariate and multivariate cox regression analysis for All-Cause Mortality.

Variables	B	*p* value	95% CI		β*	*p* value	95% CI	
			Lower	Upper			Lower	Upper
Age	0.064	< 0.001	1.051	1.082	0.051	< 0.001	1.036	1.069
Female	0.075	0.664	0.769	1.511	—	—	—	—
DM	-0.180	0.306	0.591	1.179	—	—	—	—
HT	0.025	0.886	0.728	1.445	—	—	—	—
LVEF	-0.034	< 0.001	0.954	0.979	-0.012	0.118	0.974	1.003
NLR	0.125	< 0.001	1.070	1.200	0.052	0.092	0.991	1.120
NIS	-0.229	< 0.001	0.713	0.888	-0.122	0.040	0.788	0.994

Univariate Cox proportional hazards regression analysis was performed to evaluate the association between potential predictors and all-cause mortality. Variables with a p-value <0.10 in univariate analysis were subsequently included in the multivariate Cox regression model to identify independent predictors. Hazard ratios (Exp(B)) and their 95% confidence intervals (CI) are presented for both univariate and multivariate analyses, with regression coefficients (β) provided for the multivariate model.*

NLR: Neutrophil-to-Lymphocyte Ratio; LVEF: Left Ventricular Ejection Fraction; NIS: Nutritional Inflammatory Score; DM: Diabetes Mellitus; HT: Hypertension; B: regression coefficient; Exp(B): hazard ratio; CI: Confidence Interval.

ROC curve analysis demonstrated that NIS had a strong predictive value for MACE, with an area under the curve (AUC) of 0.886. Kaplan-Meier survival analysis showed a significantly higher incidence of MACE in patients with NIS values below 3.3 (log-rank test, χ^2 = 54.056, p<0.001) (Figure 1).

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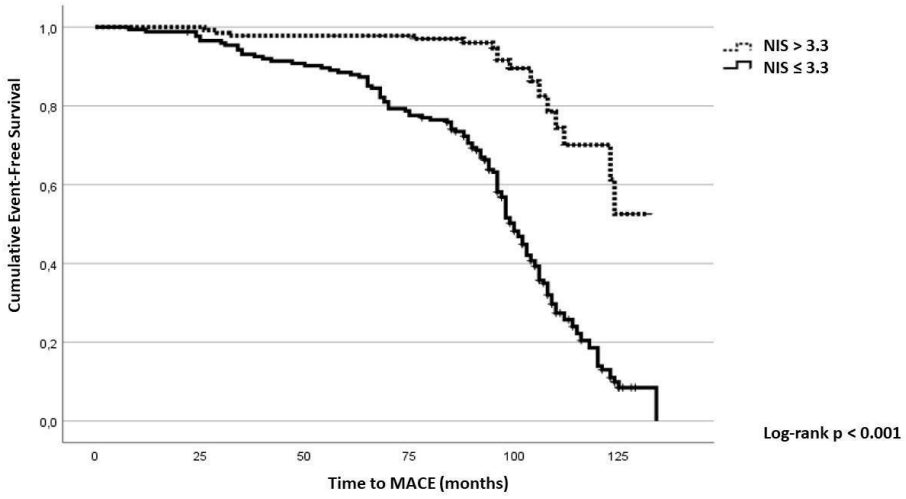


Figure 1. Kaplan-Meier Survival Curve for Major Adverse Cardiovascular Events (MACE) according to NIS Cut-off Value.

Kaplan–Meier survival curve showing the cumulative event-free survival of major adverse cardiovascular events (MACE) stratified by the Nutritional Inflammatory Score (NIS) using a cut-off value of 3.3. Patients with NIS ≤ 3.3 (solid line) had significantly higher MACE rates than those with NIS > 3.3 (dashed line) during long-term follow-up. (log-rank p<0.001).

For all-cause mortality, the ROC curve analysis yielded an AUC of 0.799. Patients with NIS values below 3.9 had significantly higher mortality rates during follow-up (log-rank test, χ^2 = 17.139, p<0.001) (Figure 2).

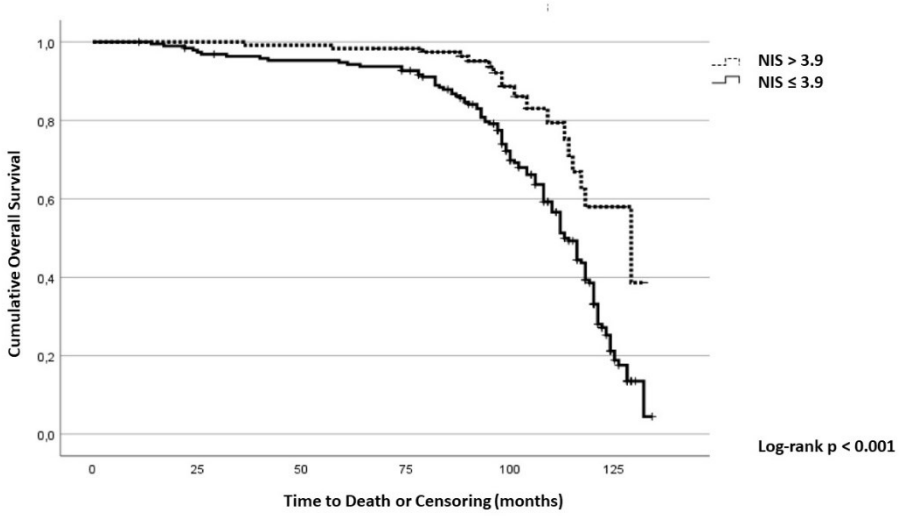


Figure 2. Kaplan–Meier Survival Curve for All-Cause Mortality Stratified by NIS Cut-off Value.

Kaplan–Meier survival curve showing the cumulative overall survival of all-cause mortality stratified by the Nutritional Inflammatory Score (NIS) using a cut-off value of 3.9. Patients with NIS ≤ 3.9 (solid line) had *significantly higher mortality rates than those with NIS > 3.9 (dashed line) during long-term follow-up (log-rank p < 0.001).*

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The clear separation of survival curves further substantiates the prognostic utility of ROC-derived NIS thresholds in stratifying long-term risk.

Discussion

We assessed the long-term prognostic value of the Nutritional Inflammatory Score (NIS) and NLR for MACE and all-cause mortality in NSTEMI patients. NIS emerged as a particularly strong and independent predictor, outperforming NLR. Unlike NLR, NIS reflects both inflammatory and nutritional status, which may explain its stronger prognostic performance [15-17]. In this study, NIS was calculated by dividing serum albumin by the neutrophil-to-lymphocyte ratio (NLR). Although this ratio has been investigated in limited non-cardiovascular studies, this is the first study to define and evaluate NIS as a long-term prognostic marker in NSTEMI [15]. These results underscore the potential of NIS as a novel integrative marker in high-risk cardiovascular patients [18]. In our study, NIS remained a significant predictor for both outcomes, outperforming NLR.

This discrepancy may be attributed to the inclusion of serum albumin, which functions not only as a negative acute-phase reactant but also as a sensitive marker of nutritional reserve and hepatic protein synthesis. Low albumin levels are associated with chronic systemic inflammation, oxidative stress, endothelial dysfunction, and catabolic states—all of which are known contributors to adverse cardiovascular outcomes and increased mortality in NSTEMI patients. Moreover, while NLR captures transient inflammatory surges, NIS integrates a more stable and multifaceted indicator of patient vulnerability by combining inflammation and malnutrition, both of which synergistically amplify cardiovascular risk. This combined reflection of immune and metabolic compromise may explain the superior prognostic value of NIS.

One of the most notable advantages of NIS is its simplicity and accessibility [19,20]. Calculated from routine laboratory tests, NIS allows for rapid bedside assessment without additional costs [21,22]. Moreover, it remains unaffected by medications commonly used in NSTEMI management, such as statins, antiplatelet agents, or anticoagulants [23,24]. Although derived from a single blood sample, NIS offers insights beyond acute-phase inflammatory response, capturing the patient's overall immuno-nutritional reserve, which plays a crucial role in long-term prognosis [25].

NSTEMI patients continue to face high rates of morbidity and mortality despite guideline-directed medical therapy [26,27]. Unlike STEMI, the NSTEMI population exhibits greater clinical heterogeneity, making management decisions more complex [28]. Current guidelines emphasize the importance of early risk stratification, particularly in determining the timing of revascularization [3]. However, adverse events such as recurrent myocardial infarction, heart failure hospitalization, and repeat revascularization procedures may develop during long-term follow-up, further underlining the need for robust prognostic markers available at admission [29]. Most existing risk scores primarily focus on short-term outcomes, highlighting the need for simple and accessible biomarkers capable of predicting long-term prognosis [30].

Our study demonstrated that NIS effectively predicts long-term adverse cardiovascular outcomes and mortality, suggesting its potential utility not only in risk stratification but also in informing early management strategies. Its ease of calculation, objectivity, and independence from therapeutic interventions make NIS a practical tool for initial patient assessment. Furthermore, its ability to capture long-term risk from the outset could aid in guiding treatment decisions and optimizing resource allocation.

The NIS cut-off values of 3.3 and 3.9 were derived using the Youden index to optimize sensitivity and specificity for predicting MACE and all-cause mortality, respectively. Although these thresholds were data-driven, their strong discriminative ability highlights their potential relevance in early clinical

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decision-making. According to commonly accepted standards, AUC values >0.80 indicate excellent discriminatory ability, further supporting the clinical relevance of NIS [31]. Future prospective studies are warranted to validate the generalizability and clinical applicability of these cut-off points across broader NSTEMI populations.

Furthermore, our results may be interpreted in light of known pathophysiological mechanisms linking systemic inflammation and poor nutritional status to adverse cardiovascular remodeling. Chronic inflammation is a central driver of endothelial dysfunction, plaque instability, and maladaptive cardiac remodeling, all of which increase the risk of adverse outcomes after myocardial infarction. Similarly, hypoalbuminemia reflects not only poor nutritional reserve but also heightened systemic catabolism, which contributes to impaired healing, immune dysfunction, and myocardial fibrosis.

By combining these two domains, the NIS may reflect a cumulative burden of immune-nutritional compromise that predisposes patients to progressive ventricular dysfunction and late adverse events. These mechanistic insights further support the clinical relevance of NIS as a biomarker that transcends conventional risk stratification models.

Study limitations

Although the retrospective and single-center design of our study represents inherent limitations, the large sample size and extended follow-up period significantly strengthen the clinical relevance of our findings. Additionally, standardized data collection protocols and comprehensive follow-up strategies, including national e-health systems, enhance the robustness and reliability of our results. Due to the retrospective nature of our study, data regarding key clinical interventions such as percutaneous coronary intervention (PCI) and the use of evidence-based pharmacotherapies, including statins, antiplatelet agents, or beta-blockers, were not uniformly available. Although these treatments are known to influence both MACE and mortality outcomes, our primary objective was to assess the prognostic value of laboratory-based parameters at the time of admission. Nevertheless, the lack of treatment data represents a limitation of our study and underscores the need for future prospective studies that incorporate these variables.

Furthermore, although validated risk scoring systems such as GRACE, TIMI, or SYNTAX have demonstrated prognostic utility in acute coronary syndromes, these models were not incorporated into our analysis due to the retrospective nature of data collection and the primary aim of evaluating the independent predictive value of NIS. We acknowledge this as a limitation and believe that future studies should explore the integration of NIS into established risk models to assess potential additive value. In addition, this study did not compare NIS with other inflammation-based indices such as SII, SIRI, or PNI, which may also carry prognostic value. Future studies should evaluate the incremental value of NIS in comparison with or in addition to these established markers.

Conclusion

NIS represents a simple, objective, and cost-effective biomarker that provides valuable prognostic information regarding long-term cardiovascular outcomes and overall survival in NSTEMI patients. By reflecting both inflammatory burden and nutritional status, NIS offers a comprehensive assessment of patient vulnerability beyond conventional risk factors. In our study, NIS was not only statistically significant but also demonstrated excellent discriminatory ability through ROC and Kaplan-Meier analyses, reinforcing its clinical relevance. This dual marker, derived entirely from routine admission labs, stands out for its accessibility, interpretability, and stability in the acute setting — characteristics that are increasingly sought after in contemporary cardiovascular risk assessment.

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From a clinical standpoint, NIS has the potential to bridge the gap between complex scoring systems and bedside decision-making. Its independence from medications and procedures, and its consistent association with both MACE and all-cause mortality, make it a particularly robust tool for long-term prognostication. We believe that integrating NIS into existing risk models like GRACE or TIMI could refine patient stratification and potentially improve clinical outcomes by identifying high-risk individuals at an earlier stage. Future prospective, multicenter studies are essential to confirm these findings, explore sex- and age-specific thresholds, and determine whether NIS-guided management strategies can translate into measurable improvements in care pathways and patient survival.

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Conflict of interest

The authors declared no conflicts of interest with respect to the research, authorship, and/or publication of this article.

Data availability statement

The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

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Supplementary Materials

Table S1. Comparison of Clinical and Laboratory Variables Between Patients With and Without All-cause Mortality

Variables	All-cause Mortality(+) (n=148)	All-cause Mortality(–) (n=166)	p-value
Age (years)	67.71 ± 10.63	58.30 ± 6.55	<0.001
Female, n (%)	52 (35.1%)	53 (31.9%)	0.578
Diabetes Mellitus, n (%)	48 (32.4%)	60 (36.1%)	0.492
Hypertension, n (%)	99 (66.9%)	118 (71.1%)	0.423
Left Ventricular Ejection Fraction (%)	40.22 ± 11.69	52.33 ± 9.91	<0.001
Neutrophil-to-Lymphocyte Ratio (NLR)	5.71 ± 2.90	3.35 ± 2.06	<0.001
Nutritional Inflammatory Score (NIS)	2.47 ± 1.53	4.59 ± 2.09	<0.001

Clinical and laboratory characteristics of patients were compared according to all-cause mortality status during follow-up. Continuous variables are presented as mean ± standard deviation, and categorical variables are expressed as counts and percentages.

Table S2. Multivariate Cox Regression Analysis for Individual Components of Major Adverse Cardiovascular Events (MACE)

Variables	HF Hospitalization		CV Death		Revascularization		Recurrent MI	
	HR (95%CI)	p value	HR (95%CI)	p value	HR (95%CI)	p value	HR (95%CI)	p value
Age	1.019 (1.002–1.037)	0.032	1.057 (1.036–1.079)	<0.001	1.033 (1.013–1.053)	<0.001	1.040 (1.018–1.063)	<0.001
LV-EF	0.975 (0.960–0.991)	0.002	0.972 (0.952–0.993)	0.009	0.985 (0.968–1.003)	0.073	0.993 (0.974–1.013)	0.466
NLR	1.104 (1.032–1.181)	0.004	1.073 (0.989–1.164)	0.090	1.061 (0.988–1.140)	0.108	1.160 (1.064–1.265)	<0.001
NİS	0.774 (0.673–0.891)	<0.001	0.760 (0.624–0.925)	0.007	0.637 (0.530–0.766)	<0.001	0.616 (0.490–0.775)	<0.001

Multivariate Cox proportional hazards regression analyses were performed to evaluate independent predictors for each individual component of the composite MACE endpoint, including heart failure hospitalization, cardiovascular death, revascularization procedures during follow-up, and recurrent myocardial infarction. Hazard ratios (HR) with corresponding 95% confidence intervals (CI) and p-values are presented.

NLR: Neutrophil-to-Lymphocyte Ratio; LVEF: Left Ventricular Ejection Fraction; NIS: Nutritional Inflammatory Score; HR: Hazard Ratio; CI: Confidence Interval; MI: Myocardial Infarction; HF: Heart Failure; CV: Cardiovascular.

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