ORIGINAL ARTICLE

The relationship between prognostic nutritional index and long-term mortality in patients undergoing emergency coronary artery bypass graft surgery for acute-ST elevation myocardial infarction

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ABSTRACT

BACKGROUND: Malnutrition and the prognosis of coronary artery disease (CAD) are shown to be correlated. The significance of nutritional status has been evaluated in patients with ST elevation myocardial infarction (STEMI), stable CAD, and elective coronary artery bypass graft (CABG) surgery. However, the prognostic impact of poor nutritional status on STEMI patients who underwent emergent CABG is not known. In this study, we aimed to investigate the relationship between nutritional status assessed by the prognostic nutritional index (PNI) and long-term mortality in STEMI patients who underwent emergent CABG. To the best of our knowledge, our study is the first one to evaluate the PNI effect on this specific population.

METHODS: 131 consecutive patients with STEMI who did not qualify for primary percutaneous coronary intervention and required emergent CABG between 2013 and 2018 were included in our study. The study population was divided into two groups: survivors and non-survivors. The PNI was calculated as 10 × serum albumin (g/dL) + 0.005 × total lymphocyte count (per mm^3) for both groups, using the preoperative data. The optimal cut-off value was obtained by receiver operating characteristic (ROC) analysis. According to the cut-off value, we investigated the relationship between PNI and long-term mortality.

RESULTS: The mean age of the study population was 57.0±10.6. During the median 92.7 (70.0–105.3)-month follow-up, 32 of the 131 patients (24.4%) died. Regression analysis showed a significant association between glucose levels (hazard ratio (HR), 1.007; 95% confidence interval (CI), 1.002–1.012; p=0.011) and PNI (HR, 0.850; 95% CI, 0.787–0.917; p<0.001) and long-term mortality. According to the ROC analysis, the cut-off value for PNI to predict all-cause mortality was found to be 44.9, with a sensitivity of 81.3% and a specificity of 89.9%. In addition, age, ejection fraction, glomerular filtration rate, Killip classification, and left anterior descending-left internal mammary artery graft use are significantly associated with long-term all-cause mortality in STEMI patients undergoing emergency CABG.

CONCLUSION: The PNI was significantly associated with long-term mortality in patients with STEMI who underwent emergent CABG. PNI can be used to improve the accuracy of the risk assessment of STEMI patients undergoing emergent CABG.

Keywords: Acute myocardial infarction; emergency surgery; prognostic nutritional index.

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INTRODUCTION

Ischemic heart disease remains a leading global cause of mortality, with acute ST-elevation myocardial infarction (STEMI) representing a significant subset. The recommended treatment for STEMI includes reperfusion therapy, such as fibrinolytic treatment or percutaneous coronary intervention (PCI). In specific cases where PCI is unsuitable, patients have a high-risk myocardial area, or they are in cardiogenic shock with mechanical complications, emergency coronary artery bypass graft (CABG) surgery is considered as per current guidelines.[1]

Numerous studies have explored factors influencing mortality in acute myocardial infarction (AMI), encompassing both STEMI and non-STEMI cases.[2,3] However, limited data are available on STEMI patients undergoing emergency CABG for primary revascularization. It is crucial to identify risk factors and markers that impact mortality through risk classification in this specific subgroup.

Malnutrition poses a significant public health concern, with prevalence estimates ranging from approximately 30% to 70% among hospitalized individuals. This condition has adverse effects on various physiological systems, including the gastrointestinal, cardiovascular, endocrine, and immunological systems, as well as overall recovery processes. Several nutritional indices, including the Prognostic Nutritional Index (PNI), have been developed to assess nutritional status.[4] Recent research has highlighted a significant association between reduced PNI levels and increased mortality rates in patients with cardiovascular conditions.[5-7]

In the context of our study, we aimed to investigate the impact of PNI on mortality among individuals diagnosed with STEMI who were undergoing emergency CABG surgery.

MATERIALS AND METHODS

Study Population

Between 2013 and 2018, we conducted a retrospective analysis involving a total of 131 patients diagnosed with STEMI who met specific inclusion criteria for our study. These criteria included patients with coronary artery anatomies that were deemed unsuitable for primary PCI or those who had previously undergone unsuccessful primary PCI. Additionally, we selected patients who presented with persistent angina or hemodynamic instability within the initial 6 h following the onset of angina for emergency CABG.

Conversely, we excluded individuals undergoing elective CABG, those with general vascular diseases, or patients disqualified from surgery due to anesthesia-related complications. Furthermore, patients experiencing acute STEMI mechanical complications, those diagnosed with left bundle branch block or cardiac pacemaker rhythm, those undergoing concurrent valve surgery, or those with inaccessible data were also excluded from our study. Following a meticulous application of these exclusion criteria, we retained a final cohort of 131 patients for our study. The study protocol was approved by the local ethical committee, and the study was conducted in accordance with the requirements of the Helsinki Declaration.

The primary endpoint of the study was the long-term all-cause mortality rate. Following a systematic review of hospital records, demographic information and cardiovascular risk factors (such as age, smoking habits, family history, presence of hypertension, and hyperlipidemia) were collected alongside the pre-operative, intraoperative, and post-operative characteristics of the patients. Missing variables were obtained through telephone interviews with the patients and/or their family members.

All patients were screened for malnutrition using PNI. Baseline PNI was calculated using the previously defined formula by using the variables serum albumin levels and lymphocyte count.[8] The formula for the calculation of PNI was: 10 * serum albumin (g/Dl) + 0.005 * total lymphocytes (count per mm^3). Blood samples were collected in the early morning after overnight fasting and were analyzed in a Mindray BC-6000 automatic hematologic analyzer (Mindray Global, Shenzhen, China).

The surgical procedure was conducted via a median sternotomy approach, performed under general anesthesia. In hemodynamically stable patients, the preparation of the left internal mammary artery (LIMA) and saphenous vein grafts was carried out, whereas the use of LIMA was omitted for unstable patients. Arterial cannulation was established from the ascending aorta, and venous cannulation was executed from the appendage of the right atrium, thus initiating cardiopulmonary bypass. Systemic hypothermia was meticulously maintained at 32°C, and a cross-clamp was applied to the ascending aorta to temporarily halt blood flow. We utilized normothermic antegrade blood cardioplegia to induce diastolic arrest. Following this, distal anastomoses were meticulously performed, and the cross-clamp was removed to allow for systemic warming.

For the proximal anastomoses of the saphenous vein graft, we employed side clamps. Cardiopulmonary bypass was terminated when the patient's temperature reached 36°C and they achieved hemodynamic stability, supported by appropriate arterial blood gas analysis. After ensuring hemostasis, we positioned drainage tubes and cardiac pacemaker wires and subsequently closed the sternum.

Survival data for the patients after the surgery were retrieved from the electronic hospital system or the national population registry. The study population was divided into two groups based on the presence of mortality. To assess the determinants of long-term mortality, these groups were compared in terms of demographic characteristics, preoperative, intraoperative, and postoperative features.

Statistical Analyses

The data analysis in this study was performed using Statistical Package for the Social Sciences, version 24.0 (SPSS Inc., Chicago, Illinois, USA). To assess the normal distribution of variables, we employed both visual methods, such as histograms and probability curves, as well as analytical methods like the Kolmogorov-Smirnov and Shapiro-Wilk tests. Numerical variables that exhibited normal distribution were presented as mean ± standard deviation (SD), whereas numerical variables without normal distribution were described as median (interquartile range), and categorical variables were expressed as percentages (%).

For the comparison of numerical variables like PNI between two groups, we utilized student t-tests and the Mann–Whitney U-test. To compare categorical variables, Chi-square or Fisher's exact tests were employed. In order to assess the prognostic accuracy of PNI for all-cause mortality, we generated receiver operating characteristic (ROC) curves. Additionally, we constructed event-free survival curves using the Kaplan-Meier method and subsequently compared them using the log-rank test.

To calculate hazard ratios (HRs) and 95% confidence intervals (95% CI) for clinical endpoints, both univariable and multivariable Cox proportional hazards models were applied. Throughout this study, a significance level of p<0.05 was considered to indicate statistical significance.

RESULTS

The average age of the study group was 57±10.6 years, with 111 patients (84.7%) being male. Over an average follow-up period of 92.7 (range: 70.0–105.3) months, all-cause mortality was observed in 32 patients (24.4%), while 99 patients remained event-free. The study population was divided into two groups: survivors and non-survivors. Demographic characteristics, except for age, were similar between the two groups. The demographic, clinical, operational, and laboratory characteristics of the 131 patients are summarized in Table 1.

In terms of biochemical parameters, it is notable that the group with mortality displayed markedly higher plasma glucose levels (152.8±49.6 mg/dL vs. 208.3±90.9 mg/dL, p<0.001) and neutrophil counts (8.01±3.08×10^9/L vs. 10.51±4.10×10^9/L, p<0.001). Conversely, glomerular filtration rate (GFR) (77.1±26.8 mL/min vs. 88.2±20.3 mL/min, P=0.014), lymphocyte counts (2.31±1.09×10^9/L vs. 1.24±0.66 × 10^9/L, p<0.001), albumin levels (40.4±3.3 g/dL vs. 36.4±4.9 g/dL, p<0.001), and consequently, the PNI (51.9±6.8 vs. 42.7±4.5, p<0.001) were significantly lower in this group.

When examining clinical parameters, it was evident that the group with mortality had a notably lower left ventricular ejection fraction (LVEF) (%41.1±7 vs. %45.8±6, p<0.001), and non-survivors more frequently presented with cardiogenic shock (Killip Class ≥ III) (8 vs. 2, p<0.001). Concerning the distribution of the infarct-related arteries, the group with mortality had a higher incidence of left LMCA involvement, whereas the non-mortality group had a higher frequency of left anterior descending (LAD) artery lesions.

Regarding intraoperative characteristics, there were no significant differences in the duration of cardiopulmonary bypass or aortic cross-clamp times. However, arterial revascularization with internal mammary grafts was significantly more common in the non-mortality group, while intra-aortic balloon pump (IABP) support was notably less frequent (p=0.422, p=0.038, p=0.010, and p<0.001, respectively). Postoperative ventilation time, total hospital stay, and intensive care unit stay were all significantly longer in the group with mortality.

In the univariate regression analysis (Table 2), age, LVEF, glucose levels, GFR, Killip class, LAD-LIMA graft usage, albumin, lymphocytes, and PNI (p=0.034, p<0.001, p<0.001, p=0.006, p<0.001, p=0.005, p<0.001, p<0.001, and p<0.001, respectively) were significantly associated with long-term all-cause mortality in STEMI patients undergoing emergency CABG.

Three separate models were created for multivariable regression analysis. Along with other significant parameters, albumin was included in the 1st model, lymphocytes in the 2nd model, and PNI in the 3rd model (Table 3). According to the 3rd model multivariate regression analysis, glucose levels (HR, 1.007; 95% CI, 1.002–1.012; p=0.011) and PNI (HR, 0.850; 95% CI, 0.787–0.917; p<0.001) were identified as independent determinants of long-term all-cause mortality in STEMI patients undergoing emergency CABG.

Kaplan-Meier cumulative survival curves for all-cause mortality for patients classified using the PNI cutoff value are presented in Figure 1. Kaplan-Meier curves showed that the incidence of all-cause mortality was higher in patients with low PNI compared to patients with high PNI (log-rank test, p<0.001).

To determine the ideal cut-off value for albumin, lymphocytes, and PNI in predicting all-cause mortality in patients who underwent emergency CABG, ROC curve analyses (Fig. 2) and the Youden index [max (sensitivity + specificity - 1)] were employed. The ROC curve and the corresponding area under the curve for albumin, lymphocytes, and PNI can be seen in Table 4. According to the ROC analysis, the cut-off value for PNI to predict all-cause mortality was found to be 44.9, with a sensitivity of 81.3% and a specificity of 89.9%.

DISCUSSION

In this study, we investigated the relationship between PNI and long-term mortality in patients who underwent isolated emergency CABG. Based on our results, we found a strong association between PNI and long-term mortality rates in patients undergoing isolated CABG. To the best of our knowledge, our study is the first to evaluate the impact of PNI on this specific population.

When reviewing the literature, there are few studies that evaluate in-hospital mortality in STEMI patients who underwent primary CABG. The early mortality rate in CABG following AMI is reported to range from 8.2% to 42.6%, with higher rates in STEMI patients.[9] Rohn et al. investigated the importance of surgical revascularization timing in the early stages

Table 1. The baseline demographics, clinical and laboratory characteristics of the study groups

	Survivors n:99	Nonsurvivors n:32	p value
Age	55.6±10.2	61.5±11.8	0.025
Sex, female, n(%)	17 (17.2)	3 (9.4)	0.400
Hypertension, n(%)	59 (59.6)	18 (56.3)	0.738
Smoker, n(%)	52 (52.5)	22 (68.8)	0.108
Glucose, mg/dL	152.8±49.6	208.3±90.9	<0.001
LDL,mg/dL	121.9±30.1	126.6±30.3	0.445
HDL,mg/dL	38.3±7.8	37.6±7.0	0.652
Triglyceride ,mg/dL	151 (115-225)	150 (103-214)	0.590
GFR, mL/min	88.2±20.3	77.1±26.8	0.014
Troponin	0.23±0.33	0.25±0.27	0.748
Hemoglobin, g/dL	12.9±2.6	12.1±2.5	0.143
Neutrophils, 10^9/L	8.01±3.08	10.51±4.10	<0.001
Lymphocyte, 10^9/L	2.31±1.09	1.24±0.66	<0.001
Platelet, 10^9/L	228±74	259±98	0.060
Albumin, g/dL	40.4±3.3	36.4±4.9	<0.001
Previous PCI, n(%)	10 (10.1)	5 (15.6)	0.522
Failed PCI, n(%)	13 (13.1)	11 (34.4)	0.007
CPR before surgery, n(%)	3 (3.0)	1 (3.1)	0.978
Killip Class >III	2 (2.0)	8 (25.0)	<0.001
Infarct-related vessels			0.006
LMCA	24 (24,2)	13 (40,6)	
LAD	75 (75,8)	17 (53.1)	
CX	0 (0,0)	2 (6.3)	
RCA	0 (0,0)	0 (0.0)	
Syntax score	26.5±10	26.9±7	0.827
ACC time (min.)	47.9±19	41.9±17	0.038
CPB time (min.)	88.2±35.4	82.5±32.9	0.422
IMA use, n(%)	60 (60.6)	11 (34.4%)	0.010
Grafts per patient (n)	3 (2-3)	3 (2-3)	0.971
Ventilation time (h)	13.80±1.58	29.75±4.54	0.003
ICU stay (d)	2.49±1.38	4.62±4.84	<0.001
Hospital stay (d)	7.10±3.40	9.24±4.39	0.006
IABP Support	21 (21.2)	21(65.6)	<0.001
Drainage (ml)	639.1±152.8	646.8±184.1	0.815
PNI	51.9±6.8	42.7±4.5	<0.001
LVEF, %	45.8±6	41.1±7	<0.001

Data are expressed as percentage, mean±standard deviation, or median (interquartile range). ACC: aortic cross clamp; CPB: cardiopulmonary bypass; CPR: cardiopulmonary resuscitation; CX: circumflex artery; GFR: glomerular filtration rate; HDL: high density lipoprotein; IABP: intraarterial balloon pump; ICU: intensive care unit; IMA: internal mammary artery; LAD: left anterior descending artery; LDL: low density lipoprotein; LMCA: left main coronary artery; LVEF: left ventricular ejection fraction; PCI: percutaneous coronary intervention; PNI: prognostic nutritional index; RCA: right coronary artery.

of STEMI for in-hospital mortality. They found that LVEF and Killip class were associated with in-hospital mortality. They concluded that reduced ejection fraction, poor hemodynamic status, and cardiogenic shock were risk factors for early mortality.[10] In our study, consistent with this correlation, the group with mortality had a higher Killip class and lower LVEF. Filizcan et al. reported that advanced age and preoperative intra-aortic balloon pump use were independent determinants of in-hospital mortality, and in our study, in line with this, the mortality group had higher age and intra-aortic balloon pump

Table 2. Univariable regression analysis for independent predictors of mortality

	HR	95% CI	p value
Age	1.038	1.003-1.074	0.034
Male	0.563	0.172-1.851	0.344
Current smoking	1.891	0.895-3.994	0.095
Hypertension	0.829	0.412-1.666	0.598
LVEF	0.910	0.865-0.958	<0.001
Glucose	1.010	1.006-1.015	<0.001
Gfr	0.976	0.960-0.993	0.006
LDL-C	1.004	0.993-1.015	0.482
HDL-C	0.992	0.947-1.039	0.723
KILLIP	7.100	3.164-15.931	<0.001
Troponin	1.102	0.430-2.827	0.840
Lad-Lima	0.343	0.164-0.718	0.005
Albumin	0.159	0.074-0.342	<0.001
Lymphocyte	0.191	0.098-0.371	<0.001
PNI	0.816	0.765-0.869	<0.001

CI: confidence interval; HR: hazard ratio; HDL: high density lipoprotein; LVEF: left ventricular ejection fraction; LDL: low density lipoprotein; PNI: prognostic nutritional index.

Table 3. Multivariable regression analysis for independent predictors of mortality

	Model 1 (Albumin)		Model 2 (Lymphocyte)		Model 3 (PNI)	
	HR (95% CI)	p value	HR (95% CI)	p value	HR (95% CI)	p value
Age	1.025 (0.985-1.067)	0.222	0.997 (0.959-1.036)	0.862	1.005 (0.964-1.048)	0.818
LVEF	0.963 (0.906-1.023)	0.224	0.967 (0.909-1.028)	0.282	0.977 (0.914-1.044)	0.487
Glucose	1.007 (1.002-1.012)	0.008	1.007 (1.002-1.012)	0.010	1.007 (1.002-1.012)	0.011
Gfr	0.996 (0.978-1.014)	0.640	0.988 (0.970-1.006)	0.178	0.998 (0.979-1.016)	0.807
KILLIP	2.790 (1.133-6.871)	0.026	2.777 (1.121-6.878)	0.027	2.052 (0.816-5.157)	0.126
lad_lima	0.652 (0.282-1.508)	0.318	0.721 (0.317-1.638)	0.435	0.714 (0.302-1.690)	0.444
Albumin	0.377 (0.146-0.971)	0.043				
Lymphocyte			0.277 (0.138-0.555)	<0.001		
PNI					0.850 (0.787-0.917)	<0.001

CI: confidence interval; HR: hazard ratio; HDL: high density lipoprotein; LVEF: left ventricular ejection frac-tion; LDL: low density lipoprotein; PNI: prognostic nutritional index.

usage.[11] Kinoshita et al. found that preoperative renal dysfunction was associated with long-term mortality, and in our study, GFR was lower in the mortality group.[12] The LIMA graft is known to have a longer patency duration compared to saphenous grafts, and the long-term outcomes of LIMA grafts are better understood.[13] The prevalence of multi-vessel coronary artery disease (CAD) is high in patients with diabetes mellitus. Strong evidence supports CABG as the optimal revascularization strategy in ischemic heart disease, and it can independently predict postoperative mortality.[14] In our study, blood glucose levels were also identified as an independent predictor of long-term mortality following CABG.

Malnutrition, defined as deterioration in nutritional status, represents a condition where food intake and protein conversion decrease despite meeting regular metabolic requirements.[4] Malnutrition has been reported to be associated with a poor prognosis in patients with heart failure and CAD.[15] Albumin, a negative acute-phase protein, serves as a good indicator of a patient's nutritional status. Decreased serum albumin levels lead to increased blood viscosity and impaired endothelial function, which has been linked to adverse outcomes in STEMI.[16] Specifically, hypoalbuminemia, especially during the preoperative period, has been shown to be an indepen-

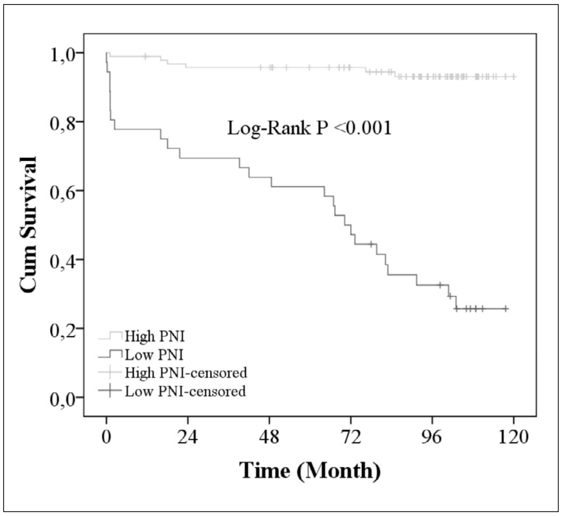

Figure 1. The Kaplan-Meier curves of PNI for long-term mortality.

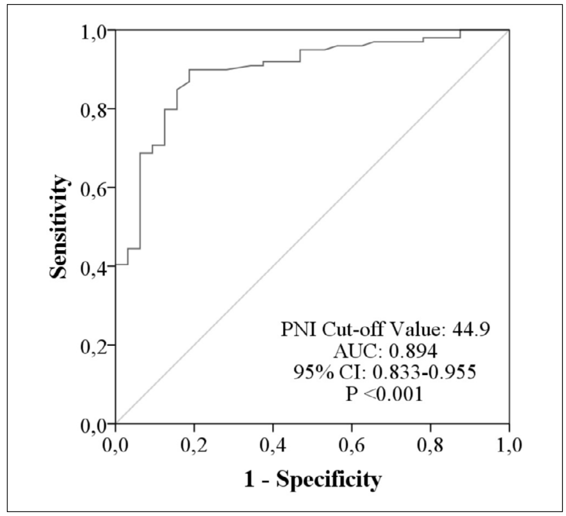

Figure 2. Estimation of long term mortality by ROC curve of albumin, lymphocyte and PNI.

Table 4. Cut off values and ROC curve data of albumin lymphocyte PNI

	Cut-off value	AUC	95% CI	p value
Albumin	38.6	0.748	0.649-0.847	<0.001
Lymphocyte	1.25	0.844	0.757-0.932	<0.001
PNI	44.9	0.894	0.833-0.955	<0.001

AUC: area under curve; CI: confidence interval; PNI: prognostic nutritional index.

dent risk factor for long-term mortality in patients undergoing CABG.[17]

Lymphocytes are a crucial component of the immune system, and lymphopenia has been previously investigated in CAD and cardiovascular diseases.[18] Lymphopenia is an important predictor of mortality in patients undergoing CABG surgery.[19] PNI, based on serum albumin concentration and the total lymphocyte count in peripheral blood, contributes to the systematic evaluation of immune-nutritional status. PNI was initially designed to assess perioperative immune-nutritional status and surgical risk in patients undergoing gastrointestinal surgery.[5] Subsequently, PNI has been associated with higher mortality in cardiovascular diseases such as myocardial infarction and pulmonary embolism.[6,7,20] Keskin et al. found that low preoperative PNI was an independent predictor of mortality in patients undergoing CABG.[21] To the best of our knowledge, our study is the only one that evaluates long-term mortality in STEMI patients who underwent emergency CABG in relation to PNI.

CONCLUSION

In our study, PNI was found to be associated with long-term mortality in patients who underwent isolated CABG after STEMI. The use of PNI as a method to predict prognosis in patients treated with CABG appears to be a simple and practical approach in clinical practice.

Limitation

Our study had the following limitations: First of all, it was a retrospective and observational study. Second, our study had a limited number of emergency CABG cases. Finally, further prospective, randomized, multicenter studies are needed to illustrate the exact power of this scoring system.

Ethics Committee Approval: This study was approved by the Istanbul Mehmet Akif Ersoy Thoracic and Cardiovascular Surgery Training and Research Hospital Ethics Committee (Date: 19.09.2023, Decision No: 2023.07-72).

Peer-review: Externally peer-reviewed.

Authorship Contributions: Concept: G.D., M.Y.; Design: H.H., M.Y., A.A.Ş.; Supervision: G.D., A.R.D., Ö.Ç.; Materials: A.A.Ş., H.H.; Data collection and/or processing: G.D., A.A.Ş.; Analysis and/or interpretation: A.R.D., H.H.; Literature search: Ö.Ç., F.U., G.D.; Writing: G.D., A.A.Ş., H.H.; Critical review: G.D., M.Y.

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ORİJİNAL ÇALIŞMA - *ÖZ*

Akut ST yükselmeli miyokard infarktüsü nedeniyle acil koroner arter bypass greft cerrahisi uygulanan hastalarda prognostik beslenme indeksi ile uzun dönem mortalite arasındaki ilişki

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AMAÇ: Koroner arter hastalığında (KAH) malnütrisyon ve prognozun ilişkili olduğu gösterilmiştir. ST yükselmeli miyokard enfarktüsü (STEMI), stabil KAH ve elektif koroner arter baypas grefti (KABG) ameliyatı olan hastalarda beslenme durumunun önemi değerlendirilmiştir. Ancak acil KABG uygulanan STEMI hastalarında kötü beslenme durumunun prognostik etkisi bilinmemektedir. Bu çalışmada acil KABG uygulanan STEMI hastalarında prognostik beslenme indeksi (PNI) ile değerlendirilen beslenme durumu ile uzun dönem mortalite arasındaki ilişkiyi araştırmayı amaçladık. Bildiğimiz kadarıyla çalışmamız bu spesifik popülasyonda PNI etkisini değerlendiren ilk çalışmadır.
GEREÇ VE YÖNTEM: Çalışmamıza 2013-2018 yılları arasında primer PKG'ye uygun olmayan ve acil KABG gerektiren STEMI'li ardışık 131 hasta dahil edildi. Araştırma popülasyonu hayatta kalanlar ve hayatta kalmayanlar olarak iki gruba ayrıldı. PNI, ameliyat öncesi veriler kullanılarak her iki grup için 10 x serum albümini (g/ dl) + 0.005 x toplam lenfosit sayısı (mm^3 başına) şeklinde hesaplandı. Optimum kesme değeri, alıcı işletim karakteristiği (ROC) analizi ile elde edildi. Cut-off değerine göre PNI ile uzun dönem mortalite arasındaki ilişkiyi araştırdık.
BULGULAR: Çalışma grubunun yaş ortalaması 57.0±10.6 idi. Ortalama 92.7 (70.0-105.3) aylık takip sırasında 131 hastanın 32'si (%24.4) öldü. Regresyon analizi, glukoz düzeyleri (HR, 1,007; %95 GA, 1.002-1.012; p=0.011) ile PNI (HR, 0.850; %95 GA, 0.787-0.917; p<0.001) arasında uzun vadeli mortalite arasında anlamlı ilişki olduğunu gösterdi. ROC analizine göre PNI'nın tüm nedenlere bağlı mortaliteyi öngörmede kesim değeri 44.9, duyarlılığı %81.3, özgüllüğü ise %89.9 olarak belirlendi. Ayrıca yaş, ejeksiyon fraksiyonu, glomerüler filtrasyon hızı, Killip sınıflandırması ve LAD - LIMA greft kullanımı, acil KABG uygulanan STEMI hastalarında uzun vadeli tüm nedenlere bağlı mortalite ile anlamlı düzeyde ilişkilidir.
SONUÇ: PNI, acil KABG uygulanan STEMI hastalarında uzun vadeli mortalite ile anlamlı derecede ilişkiliydi. PNI, acil KABG geçiren STEMI hastalarının risk değerlendirmesinin doğruluğunu artırmak için kullanılabilir.

Anahtar sözcükler: Acil cerrahi; akut miyokard enfarktüs; prognostik beslenme indeks.

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