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Original Article

Prognostic Nutritional Index and Systemic Immune Inflamatory Index: Can They Predict Mortality in Peritoneal Dialysis Patients?

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ABSTRACT

Objective: Nutritional evaluation in peritoneal dialysis patients, one of the replacement treatment methods in chronic renal failure, is becoming increasingly important in terms of mortality and morbidity. The Prognostic Nutritional Index (PNI) and Immune-Inflammation Index (SII) are new inflammatory indexes that have been shown to have prognostic value in many diseases. In our study, we investigated the relationship between high SII scores, low PNI scores, and mortality in PD patients.

Methods: PNI and SII scores were calculated in 84 patients undergoing peritoneal dialysis. Patients with low PNI scores and high SII scores were divided into groups. These indices were examined in terms of their prediction of mortality and morbidity in peritoneal dialysis patients.

Results: The mortality rate in the low PNI group was higher than in the high PNI score group (p=0.04). There was a difference between the groups in terms of mortality KT/v values in the low SII group (p=0.008). In the SII group, this value was higher in the high SII group, and there was a statistically significant difference in PTH values between the two groups (p=0.024).

Conclusion: In our study, overall mortality was found to be higher in the low PNI group. This supports the consideration of the PNI score in the evaluation of nutritional status in peritoneal dialysis patients. As expected, we did not find a relationship with increased mortality in patients with high SII scores, probably because our number of patients was small. However, these patients have lower dialysis adequacy rates and worse bone mineral metabolism control, and renal residual urine output was lower. These three parameters are known to contribute to mortality in PD patients.

INTRODUCTION

Peritoneal dialysis (PD) is one of the renal replacement therapy options for patients with end-stage renal disease (ESRD).[1] Cardiovascular diseases (CVD) are the most common cause of death in patients with chronic renal failure.[2] Early diagnosis and prevention of cardiovascular diseases are vital in order to reduce morbidity and mortality in ESRD patients.[3] Protein-energy malnutrition is a common condition in peritoneal dialysis patients and is associated with high mortality.[4,5] Studies have shown that morbidity and mortality decrease with the improvement of nutritional status in this group of patients.[6,7] Recently, the International Society for Peritoneal Dialysis (ISPD) recommended nutritional assessment in adult PD patients in order to reduce cardiovascular risk.[2] However, there is no single recommended method for the assessment of malnutrition in PD patients. Therefore, in terms of the assessment of malnutrition, a careful physical examination and questionnaire are evaluated with pooled data from various parameters, including weight loss, body mass index, and serum albümin.[8]

The prognostic nutritional index (PNI) is a formula formed by the serum albumin concentration in the peripheral blood and the total lymphocyte count.[9] Recently, the

prognostic value of PNI has been variously confirmed.[10-14] There are few articles investigating the prognostic role of a low PNI score in PD patients.[15,16] The first aim of our study was to investigate the prognostic value of a low PNI score in PD patients.

On the other hand, the immune-inflammation index (SII) is a new inflammatory index calculated based on peripheral blood neutrophils, platelets, and lymphocytes. Numerous studies have shown that SII can predict the prognosis of malignant tumors such as esophageal cancer and non-small cell lung cancer.[17-19] It has also been reported that there is a relationship between high SII and mortality in patients undergoing hemodialysis.[20] Qin et al.[21] also showed that patients with albuminuria had higher systemic immune-inflammatory index values. However, there are no reports on the relationship between SII and mortality in peritoneal dialysis patients. As a secondary aim, we investigated the relationship between high SII scores and morbidity-mortality in PD patients.

In addition to these goals, we examined whether the initial high SII and low PNI scores of PD patients may predict the risk of peritonitis, which is one of the factors that increase mortality in PD patients.

MATERIALS AND METHODS

Participants

Eighty-five peritoneal dialysis patients followed up between 2018-2022, from two centers were included in our study. Patients under the age of 18, followed up less than one year, switched from chronic hemodialysis, failed renal transplantation, pregnant, and presence of any active inflammatory situations were not included in the study. The study was conducted in compliance with the ethical principles of the Helsinki Declaration and approved by the Kartal Lütfi Kırdar State Hospital Ethics Committee (number: 2021/514/193/2).

Study Protocol

This was a retrospective observational study. Clinical, demographic, and laboratory data of the patients were recorded. PNI and SII scores of the patients during the onset of PD treatment were calculated. The patients were divided into the groups as low/high PNI and high/low SII. We investigated whether low PNI and high SII patients were associated with morbidity and mortality regarding our study group.

Age, gender, weight, blood pressure, primary etiology of ESRD, history of diabetes, hypertension, hyperlipidemia, heart failure, malignancy, CVD risk factors, history of cerebrovascular and peripheral vascular disease were recorded. Laboratory values: leukocytes, lymphocytes, hemoglobin, serum albumin at the onset of PD, serum creatinine, corrected serum calcium, phosphorus, parathormone levels, CRP, and serum uric acid values were also recorded. PNI score was calculated as 10× serum albumin value (g/dl) + 0.005× peripheral lymphocyte count (per mm^3). Systemic immune-inflammation index (SII) was calculated by (N×P)/L (N, P, and L represent neutrophil counts, platelet counts, and lymphocyte counts, respectively).

Total Kt/V (Kt/V is a formula that K=urea clearance by dialysis, t=dialysis time, V=urea distribution volume in proportion to body water. It is used to evaluate dialysis adequacy) was calculated using PD Adequest software 2.0 (Baxter Healthcare Ltd). All of the patients were followed up until either cessation of PD during the study period, death, or May 30, 2022.

Statistical Analysis

Descriptive data were expressed as mean ± standard deviation (SD) and median with interquartile range (IQR) for the continuous variables and frequency and percentages (%) for the categorical variables. The Shapiro-Wilk test was used for evaluating the conformity of continuous variables to normal distribution. Peritoneal dialysis patients were divided into two groups according to their Systemic Immune-Inflammation (SII) and Prognostic Nutritional Index (PNI) levels. PNI levels were defined as low PNI (PNI≤36.6) and high PNI (PNI>36.6), and SII levels were defined as low SII (SII≤390) and high SII (SII>390). PNI groups and SII groups were compared using an independent samples t-test for normally distributed variables and the Mann-Whitney U test for non-normally distributed variables. Categorical variables were compared by using the Chi-Square or Fisher's Exact test for proportions. The survival of the PD patients was assessed using the Kaplan–Meier method, and comparisons of survival probability between PNI groups or SII groups were analyzed using the log-rank test. The univariate Cox model was applied to investigate the association between independent factors and all-cause mortality. An age-adjusted Cox model for mortality was applied. All statistical analyses were performed by SPSS software version 21 (Chicago, IL) and R (v. 4.0.2). All significance tests were two-tailed, and values of $p<0.05$ were considered statistically significant.

RESULTS

A total of 84 (35 men/49 women) PD patients were recruited in this study (Table 1). Our mean follow-up time was 44.5 months. The overall mortality rate is 20.2%. All of our patients were evaluated for cardiovascular risk factors (Table 1). SII and PNI groups are similar in terms of cardiovascular risks. Five patients were on automated PD. Conventional PD solutions, Y-sets, and twin-bag systems were utilized in continuous ambulatory PD patients. The primary cause of ESRD was diabetic nephropathy (n=69, 82.1%). Glomerulonephritis was present in 17 patients, vesicoureteral reflux in 9 patients, amyloidosis in 4 patients, polycystic renal disease in 3 patients, and renal stone disease in 3 patients. The median PNI level at baseline was 36.82 (range: 33.28-39.22) for all patients. The median SII level at baseline was 672.57 (range: 69.13-

Table 1. Demographic and characteristics of patients

	Patients (n=84)
Age	56.16±13.67
Sex, n (%)	
Men	35 (41.7)
Women	49 (58.3)
Weight	72.98±10.55
Mortality, n (%)	
Yes	17 (20.2)
No	67 (79.8)
Smoking, n (%)	
Yes	73 (86.9)
No	11 (13.1)
HT, (%)	
No	29 (34.5)
Yes	55 (65.5)
DM, n (%)	
No	69 (82.1)
Yes	15 (17.9)
Hyperlipidemia (LDL)	122 (98-157.5)
Family history of cardiovascular disease, n (%)	
No	74 (88.1)
Yes	10 (11.9)
Heart failure, n (%)	
No	75 (89.3)
Yes	9 (10.7)
Serebrovascularinfarct, n (%)	
No	80 (95.2)
Yes	4 (4.8)
Peripheral arterial disease, n (%)	
No	80 (95.2)
Yes	4 (4.8)
PD time (months)	44.5 (22.25-97.25)
Kt/V	2.26 (1.95-2.80)
PNI score	36.82 (33.28-39.22)
PNI, n (%)	
Low	43 (51.2)
High	41 (48.8)
SII score	655.83 (33.28-39.22)
SII, n (%)	
Low	20 (23.8)
High	64 (76.2)
Late onset peritotinitis frequency, n (%)	
No	48 (57.1)
Yes	36 (42.9)

HT: hypertension, DM: Diabetes Mellitus, PD time: Periton diyalysis time, PNI score: prognostic nutritional index score.

1796.67) for all patients. The patients with a high SII score had a lower rate of dialysis adequacy, worse bone mineral metabolism control, and lower renal residual urine output. The overall mortality rate was 20.2% (17/67).

The patients were divided into groups as low/high PNI and high/low SII. The comparison of demographic and laboratory values of the SII groups and PNI groups are shown in Tables 2 and 3.

The median Kt/V value was found to be 2.2 (1.92–2.75) in the high SII group and 2.71 (2.1–3.43) in the low SII group, with a statistically significant difference between the groups in terms of Kt/V values (p=0.008). The median PTH value was found to be 463 (223.25–641.25) in the high SII group. This value was higher in the high SII group, and there was a statistically significant difference between the two groups in terms of PTH values (p=0.024). There was a statistically significant difference between the two groups in terms of median residual urine values (p=0.027). The mortality rate was 21.9% in the high SII group, while it was 15% in the low SII group. There was no statistically significant difference (p=0.75) (Table 2).

On the other hand, the low PNI score group had lower serum calcium levels and higher serum CRP levels. There was a statistically significant difference between the two groups in terms of calcium levels (p=0.004) and CRP levels (p=0.007) (Table 2). Additionally, hypertension was more common in the low-score PNI group (p=0.007). The mortality rate was 12% in the low PNI group, while it was 5% in the high PNI group. There was no statistically significant difference (p=0.10) (Table 3).

The survival probabilities for the PNI groups are shown in Figure 1. The number of deaths in all patients was 17 (20.2%). The number of patients who died in the low PNI group was 12 (27.9%), whereas the number of mortalities in the high PNI group was 5 (12.2%). The mortality rate in the low PNI group was statistically significantly higher compared to the group with a higher PNI score (p=0.04).

The survival probabilities for the SII groups are shown in Figure 2. The number of patients who died in the low SII group was 3 (15%), while the number of mortalities in the high SII group was 14 (21.9%). In terms of the mortality rate, there was no statistically significant difference in the

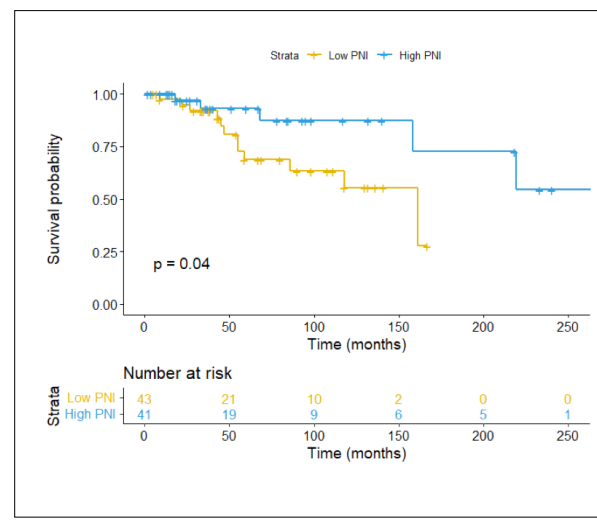

Figure 1. Survival probilities of PNI groups.

Table 2. Comparison of demographic and laboratory values of the SII groups

	Low SII (n=20)	High SII (n=64)	p
Age	54.05±16.39	56.81±12.78	0.434
Sex, n (%)			
Men	6 (30)	29 (45.3)	0.225
Women	14 (20)	35 (54.7)	
Weight	70.2±10.3	73.84±10.56	0.179
Mortality, n (%)			
No	17 (85)	50 (21.9)	0.751
Yes	3 (15)	14 (21.9)	
Smoking, n (%)			
Yes	18 (90)	55 (85.9)	0.928
No	2 (10)	9 (14.1)	
HT, n(%)			
No	7 (35)	22 (34.4)	0.959
Yes	13 (65)	42 (65.6)	
DM, n(%)			
No	15 (75)	54 (84.4)	0.535
Yes	5 (25)	10 (15.6)	
Hyperlipidemia (LDL)	117.5 (80.45–156)	123.5 (102–157.5)	0.323
Family history of cardiovascular disease (%)			
No	19 (95)	55 (85.9)	0.439
Yes	1 (5)	9 (14.1)	
Heart failure, n (%)			
No	20 (100)	55 (85.9)	0.106
Yes	0 (0)	9 (14.1)	
Serebrovascularinfarct, n (%)			
No	19 (95)	61 (95.3)	1.000
Yes	1 (5)	3 (4.7)	
Peripheral arterial disease, n (%)			
No	20 (100)	60 (93.8)	0.568
Yes	0 (0)	4 (6.2)	
PD time	37.5 (16–76.75)	49 (27.5–107.75)	0.126
Kt/V	2.75 (2.1–3.43)	2.2 (1.92–2.57)	0.008
PNI score	36.12 (32.31–38.36)	37.11 (33.91–40.09)	0.167
PNI, n (%)			
Low	12 (60)	31 (48.4)	0.367
High	8 (40)	33 (51.6)	
Albumin(gr/dl)	3.6 (3.2–3.8)	3.7 (3.39–4)	0.165
Hemoglobin	10.65 (9.73–11.5)	10.6 (9.6–11.38)	0.462
PTH	223 (133–539.5)	463.5 (223.25–641.25)	0.024
Ca	8.75 (8.2–9.5)	8.9 (8.23–9.5)	0.535
P	5.35 (4.78–5.8)	4.7 (4.23–5.9)	0.233
CRP	3.11 (3–7.77)	6 (3.11–13)	0.066
Residual urine output (ml)	1050 (214.75–1950)	375 (0–1287.5)	0.027
Late onset peritonitis frequency, n (%)			
No	13 (65)	35 (54.7)	0.416
Yes	7 (35)	29 (45.3)	

HT: hypertension; DM: Diabetes Mellitus; PD time: Periton diyalysis time; PNI score: prognostic nutritional index score; PTH: parathormone; Ca: calchıum; P: phosporus; CRP:C reaktive protein.

Table 3. Comparison of demographic and laboratory values of the PNI groups

	Low PNI (n=43)	HighPNI (n=41)	p
Age	58.61±15.09	53.59±11.64	0.091
Sex, n (%)			
Men	17 (39.5)	18 (43.9)	0.685
Women	26 (60.5)	23 (56.1)	
Weight	72 (62-83)	73 (67-78)	0.925
Mortality, n (%)			
No	31 (72.1)	36 (87.8)	0.104
Yes	12 (27.9)	5 (12.2)	
Smoking, n (%)			
Yes	39 (90.7)	34 (82.9)	0.345
No	4 (9.3)	7 (17.1)	
HT, n (%)			
No	9 (20.9)	20 (48.8)	0.007
Yes	34 (79.1)	21 (51.2)	
DM, n (%)			
No	33 (76.7)	36 (87.8)	0.186
Yes	10 (23.3)	5 (12.2)	
Hyperlipidemia (LDL)	122 (98-158)	123 (97.5-157)	0.651
Family history of cardiovascular disease, n (%)			
No	35 (81.4)	39 (95.1)	0.089
Yes	8 (18.6)	2 (4.9)	
Heart failure, n (%)			
No	38 (88.4)	37 (90.2)	1.000
Yes	5 (11.6)	4 (9.8)	
Serebrovascular infarct, n (%)			
No	40 (93)	40 (97.6)	0.616
Yes	3 (7)	1 (2.4)	
PD time (months)	47 (2-98)	39 (18-96.5)	0.788
Kt/V	2.33 (1.96-2.94)	2.11 (1.94-2.78)	0.256
SII 688.29±403.41	650.36±295.7	0.626	
SII, n (%)			
Low	12 (27.9)	8 (19.5)	0.367
High	31 (72.1)	33 (80.5)	
Ca 8.6 (8.1–9.1)	9.1 (8.55–9.95)	0.004	
CRP	8 (3.11-15)	4 (3-8)	0.007
Residual urine output (ml)	700 (0-1250)	400 (0-1700)	0.862
Late onset peritonitis frequency, n (%)			
No	26 (60.5)	22 (53.7)	0.529
Yes	17 (39.5)	19 (46.3)	

HT: Hypertension; DM: Diabetes Mellitus; PD time: Periton diyalysis time; SII score: Systemic immun inflamatory index score; PTH: Parathormone; Ca: Calchium; CRP: C reactive protein.

low SII group compared to the high SII group (p=0.98).

Univariate Cox model results are given in Table 4. According to the univariate Cox model results, there was a statistically significant increase in the risk of death in diabetic patients (HR=4.083 [95% CI 1.295–12.87], p=0.016). Age was a statistically effective factor on the risk of death; with a one-year increase in age, the risk of death increased by HR=1.041 (95% CI 1.003–1.081) (p=0.034). The increase in phosphorus value increased the risk of death statistically significantly (HR=1.446 [95% CI 1.045–2], p=0.026). High PNI, high SII, hypertension, smoking, gender, Kt/V, calcium, PTH, late peritonitis, and changes in residual urinary values were not found to be effective factors for mortality (p>0.05). According to the age-adjusted Cox model analysis, we found that only serum phosphorus levels were effective on mortality. Details are shown in Table 5.

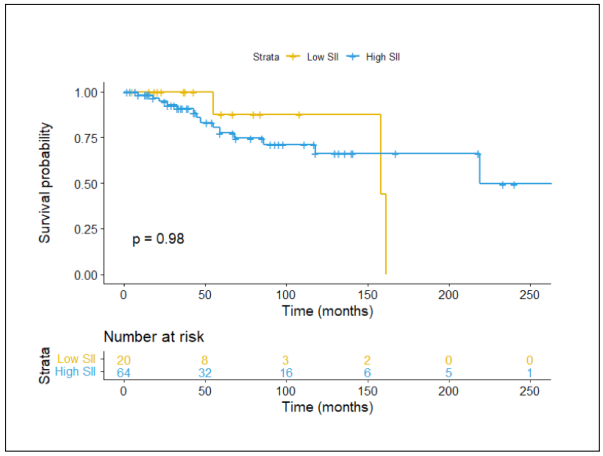

Figure 2. Survival probilities of SII groups.

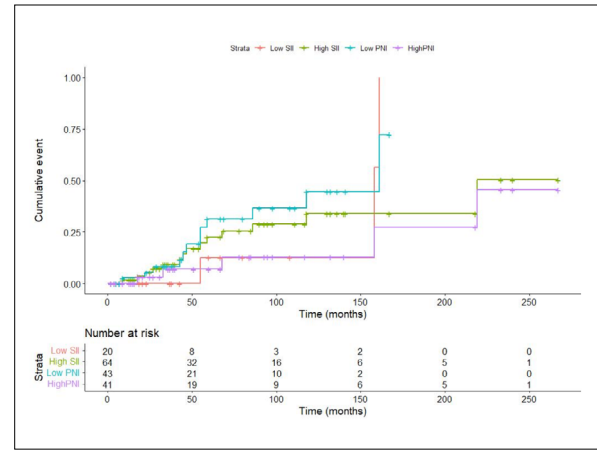

Figure 3. Cumulative comparison of mortality of patients with low PNI,high PNI, low SII and high PNI scores in peritoneal dialysis patients.

Table 4. Univariate Cox analysis results showing the consequences of low PNI score on mortality in peritoneal dialysis patients

	HR (95% CI)	SE	p
PNI, Low PNI	0.316 (0.099-1.001)	0.588	0.050
SII, HighSII	0.984 (0.279-3.47)	0.643	0.981
DM	4.083 (1.295-12.87)	0.586	0.016
HT	3.127 (0.708-13.81)	0.758	0.133
Smoking	0.292 (0.037-2.292)	1.051	0.242
Age	1.041 (1.003-1.081)	0.019	0.034
Sex female/male	1.122 (0.406-3.1)	0.518	0.824
Kt/v	1.446 (0.735-2.845)	0.345	0.285
Calcium	1.015 (0.634-1.531)	0.225	0.946
Phosphorus	1.446 (1.045-2)	0.165	0.026
Parathormone	1.001 (0.999-1.002)	0.0006	0.209
Peritonitis history	1.119 (0.423-2.959)	0.496	0.820
Residue urine output	1.0001 (0.996-1.001)	0.003	0.558

Table 5. Age adjusted cox analysis results showing the consequences of low PNI score on mortality in peritoneal dialysis patients

	HR (95% CI)	Adjusted HR (95% CI)	SE	p
PNI, low PNI	0.316 (0.099-1.001)	0.371 (0.115-1.195)	0.597	0.097
SII, HighSII	0.984 (0.279-3.47)	0.968 (0.274-3.142)	0.643	0.968
DM, yes	4.083 (1.295-12.87)	2.697 (0.729-9.972)	0.567	0.137
HT	3.127 (0.708-13.81)	2.947 (0.651-13.334)	0.770	0.160
Cigarette	0.292 (0.037-2.292)	0.352 (0.045-2.769)	1.053	0.321
Sex female	1.122 (0.406-3.1)	1.580 (0.543-4.608)	0.546	0.402
Kt/v	1.446 (0.735-2.845)	0.359 (0.753-2.725)	0.328	0.273
Calcium	1.015 (0.634-1.531)	1.050 (0.667-1.654)	0.232	0.833
Phosphorus	1.446 (1.045-2)	1.625 (1.158-2.280)	0.173	0.005
PTH	1.001 (0.999-1.002)	1.001 (1-1.003)	0.001	0.101
Late onset peritonitis	1.119 (0.423-2.959)	0.921 (0.346-2.447)	0.499	0.868
Residual urine	1 (0.996-1.001)	1 (0.999-1.001)	0.001	0.911

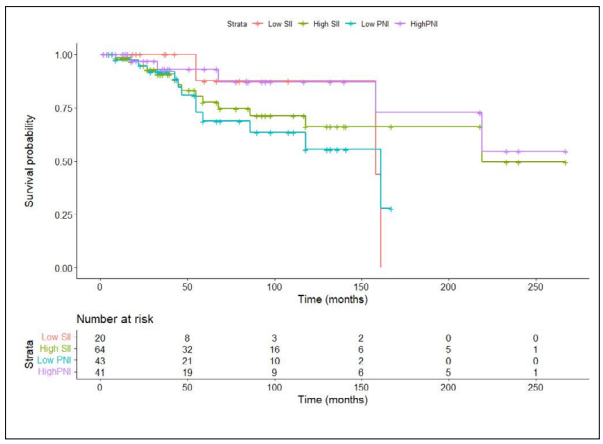

Figure 4. Cumulative comparison of survival of patients with low PNI,high PNI, low SII and high PNI scores in peritoneal dialysis patients.

When we evaluated our patients with both low PNI scores and high SII scores, we found that the difference in mortality was dependent on the PNI score. Our data are shown in Figures 3 and 4.

DISCUSSION

There are various indicators that reveal nutritional status but lack an ideal standard and simple marker. PNI, calculated by serum albumin and lymphocyte count, has been shown to be a prognostic factor in various malignancies. [12] A low PNI level is associated with a decrease in albumin and lymphocyte counts. Serum albumin is one of the markers of nutritional status and inflammation.[22] Hypoalbuminemia is associated with reduced quality of life in dialysis patients.[23] According to the results of the Canada-USA Peritoneal Dialysis Working Group, an increase of 1 g/L of serum albumin is associated with a 6% reduction in mortality.[4] In various studies, higher serum albumin levels have been shown to be associated with the stabilization of circulating levels of inflammatory cytokines and increases in oxidative stress.[24] Therefore, low albumin may be considered to be associated with impaired immunity. Absolute lymphocyte count, another aspect of PNI, is a marker of malnutrition. It has been found to be associated with all-cause mortality in non-dialysis-dependent chronic kidney patients with a lower lymphocyte percentage.[25] Evidence suggests that PNI can be used in nutritional assessment. According to numerous studies, CVD is the most common cause of death in PD patients.[2,3] One of the risk factors, malnutrition, is an important determinant of mortality in these patients, as demonstrated in various studies. Peng et al.[15] found that low PNI increased the risk of CVD and all-cause mortality in their study. In another Korean study, it was reported that low PNI was associated with increased mortality in PD patients.[16] PNI needs to be widely validated in different populations in the future. In our study, mortality was found to be higher in the low PNI group. Also, we researched mortality using the Kaplan-Meier method. In the assessment between groups, mortality rates were higher in the low PNI groups.

Accumulating evidence suggests that chronic inflammation is a major contributor to the pathogenesis and progression of chronic kidney disease (CKD) and is associated with the prognosis of dialysis patients.[26] In a study of 86 Parkinson's patients followed for 36 months, chronic inflammation was found to be associated with all-cause and cardiovascular mortality and arterial stiffness.[27] In a large sample study of 1,652 Parkinson's disease patients, chronic inflammation was again associated with an increased risk of CVD events and CVD mortality in both multivariate Cox regression models and competitive risk models.[28] Similar results were found in another study from China.[29] Chen et al.[30] in a multicenter retrospective study involving 1,753 participants, showed that chronic inflammation was independently correlated with CVD mortality. We also evaluated the relationship between high SII scores and mortality in our study, but we could not find statistical significance. The contradictory results of our study with the literature may be associated with the presence of a history of malignancy in 14 of our patients. In addition, due to the insufficient number of events/cases, we could not perform a cause-related mortality analysis. Although their malignancies were not active, we thought that this might affect the results. In addition, there were more patients with a history of systemic vasculitis as a primary nephrological disease in the low SII group. We thought that this may also be effective.

Although we did not find a relationship between mortality and patients with high SII scores, they had a lower rate of dialysis sufficiency, worse bone mineral metabolism control, and lower renal residual urine output. These three parameters may contribute to long-term mortality in PD patients. The median Kt/V value was found to be lower in the high SII group. These results may suggest that dialysis efficiency and bone mineral control will be more difficult in the future in patients with a high initial SII score. Therefore, patients with high initial SII scores may need to be followed more closely in terms of dialysis efficiency and bone mineral disorder control. In addition, since residual urine output is lower in patients with high SII scores, we think that more sensitive follow-up regarding volume control and residual urine preservation may be required in such patients.

We evaluated survival analysis between low and high PNI groups using the log-rank test. We also evaluated survival analysis between low and high SII groups using the log-rank test. In both evaluations, the low PNI score had lower survival than high PNI, and the high SII score had lower survival than low SII.

The effect of high serum phosphorus on mortality and morbidity in peritoneal dialysis patients is well known. Two of the current studies in the literature are the study conducted by Huang et al.[31] in 2021 and the study conducted by Gong et al.[32] in 2020. In both studies, it was shown that high serum phosphorus levels increase mortality and

morbidity. In our study, we also found the relationship between high serum phosphorus levels and mortality in the univariate Cox model and the age-adjusted model. In the cumulative evaluation, the effect of this situation on mortality was not observed, even if the patients with low PNI scores had high SII scores (Figures 3-4). This may suggest that initial PNI evaluation may be predictive of mortality in peritoneal dialysis patients.

Another issue we investigated in our study was whether initial SII and PNI scores could predict the risk of late-onset peritonitis in PD patients. According to the univariate Cox model statistical analysis, we could not find statistical significance in the association of low PNI and high SII scores with late-onset peritonitis. We thought that the high number of our patients with a history of cancer and vasculitis could cause the result. The retrospective design of our study and the small number of patients can be considered limitations. Longer follow-up time may be valuable. A recent study revealed that elevated systemic immune inflammation level on admission was an independent risk factor for all-cause, cardiovascular, and cancer mortality among CKD patients.[20] Because of the insufficient number of events/cases, we think that we could not show the association of those with high SII scores with overall mortality.

Conclusion

We found a correlation between low PNI score and general mortality. This supports us in also considering the PNI score in the evaluation of nutritional status in peritoneal dialysis patients.

Ethics Committee Approval

The study was approved by the Kartal Lütfi Kırdar State Hospital Ethics Committee (Date: 13.01.2021, Decision No: 2021/514/193/2).

Informed Consent

Retrospective study.

Peer-review

Externally peer-reviewed.

Authorship Contributions

Concept: S.Y., M.T.; Design: M.T., P.Ö.; Supervision: S.Y., P.Ö.; Fundings: M.M., S.F.Y., S.Y. Materials: P.Ö., E.P.; Data: M.T., S.Y.; Analysis: S.Y., E.Ö.; Literature search: E.Ö., S.F.Y. Writer: S.Y., P.Ö. Critical review: E.A., E.P., M.M.

Conflict of Interest

The authors declare that there is no conflict of interest.

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Prognostik Nutrisyonel İndeks ve Sistemik İmmün İnflamatuar İndeks: Periton Diyaliz Hastalarında Mortaliteyi Öngörebilirler mi?

Amaç: Kronik böbrek yetersizliğinde replasman tedavi yöntemlerinden biri olan periton diyalizi hastalarında nutrisyonel değerlendirme, mortalite ve morbidite açısından giderek önemli hale gelmektedir. Prognostik nutrisyonel indeksi (PNI) ve immün-inflamasyon indeksi (SII) ise birçok hastalıkta prognostik değeri gösterilmiş yeni bir inflamatuvar indekstir. Çalışmamızda PD hastalarında yüksek SII skorları ile düşük PNI skorları mortalite arasındaki ilişkiyi araştırdık.

Gereç ve Yöntem: Periton diyalizi yapılan 84 hastada PNI VE SII skorları hesaplandı. Düşük PNI skoru ile yüksek SII skorları olan hastalar gruplara ayrıldı. Periton diyaliz hastalarında mortalite ve morbiditeyi öngöstermeleri açısından incelendi.

Bulgular: Düşük PNI grubunda mortalite oranı, yüksek skorlu PNI grubuna göre yüksekti (p=0.04). Düşük SII grubunda mortalite KT/v değerleri açısından gruplar arasında fark vardı (p=0.008). SII grubunda bu değer yüksek SII grubunda daha yüksekti ve iki grup arasında PTH değerleri açısından istatistiksel olarak anlamlı fark vardı (p=0.024).

Sonuç: Çalışmamızda genel mortalite, düşük PNI grubunda daha yüksek bulunmuştur. Bu durum periton diyalizi hastalarında beslenme durumunun değerlendirilmesinde PNI skorunun da dikkate alınmasını desteklemektedir. Beklediğimiz gibi yüksek SII skoru olan hastalarda muhtemelen hasta sayımız az olduğu için, artmış mortalite ile bir ilişki bulamadık ancak bu hastaların diyaliz yeterlilik oranları daha düşük, kemik mineral metabolizması kontrolü daha kötü ve renal rezidüel idrar çıkışı daha düşüktü. Bu üç paramatrenin PD hastalarında mortaliteye katkıları bilinmektedir.

Anahtar Sözcükler: Periton diyalizi; prognostik nutrisyonel indeks; sistemik immun inflamatuvar indeks.