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THE RELATIONSHIP BETWEEN *NEUTROPHIL TO LYMPHOCYTE RATIO* (NLR) WITH REHOSPITALIZATION AND MORTALITY IN PATIENTS WITH ACUTE CORONARY SYNDROME (ACS)

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Background

Cardiovascular disease is still the leading cause of death globally and is expected to continue to increase. In Indonesia, ischemic heart disease is the main cause of morbidity and mortality based on Acute Coronary Syndrome (ACS) is a manifestation of coronary heart disease where there is decompensation of the heart due to narrowing or blockage of coronary arteries. Neutrophil to Lymphocyte Ratio (NLR) is a non-specific marker of inflammation which is simple, widespread, and affordable, and has predictive value, especially the incidence of ACS. NLR has the predictive value for the rehospitalization after the ACS incident and the mortality rate in ACS patients.

Objective

This study aims to determine the relationship between NLR values with the incidence of rehospitalization and death in ACS patients.

Method

This study is a single-center observational analytical study conducted in a retrospective cohort. The number of ACS research subjects obtained from January to December 2021 are 102 patients who are included. NLR data taken at the time of hospital admission were divided into 3 groups; low (<3), moderate (3-5), and high (>5), data on the incidence of rehospitalization who returned to treatment with reinfarction or ACS complications and mortality data during treatment were obtained through electronic medical records and then analyzed using SPSS version 23.0 program.

Results

A total of 48 patients with ACS were found in the group with low NLR values (47%), 27 people with moderate NLR scores (26.5%), and 27 people with high NLR scores (26.5%). The highest number of deaths was found in the high NLR category and there was a strong relationship between NLR values and mortality in ACS patients with a statistically significant level of significance (P = 0.038). The relationship between NLR and the incidence of rehospitalization was found in 3 people (0.3%) who were found in the low and moderate NLR categories and there was no significant relationship (P= 0.264).

Conclusion

The NLR value was associated with mortality during treatment, but was not associated with the incidence of rehospitalization in ACS patients. NLR examination is a supporting examination with a wide range of access, affordable and useful in predicting the prognosis of ACS patients.

Keywords: NLR, Acute Coronary Syndrome, Mortality, Re-hospitalization.

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Appendix

Lampiran 1. Tabel Deskriptif Subjek Penelitian

Usia
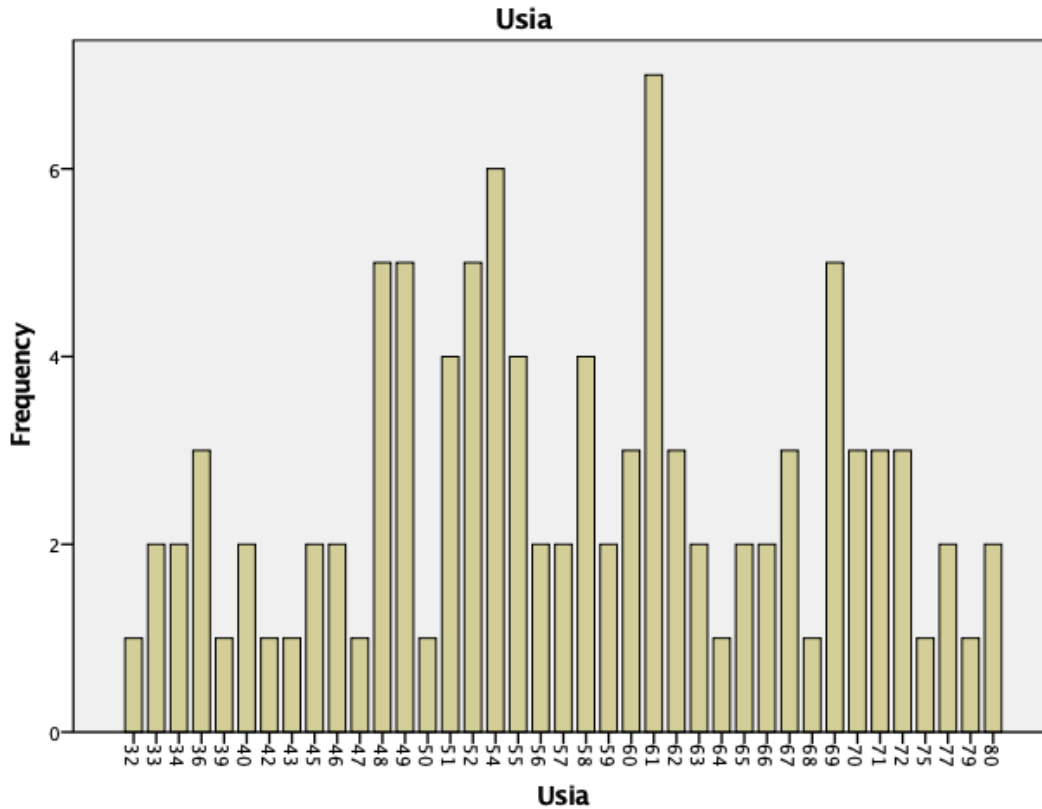
Jenis Kelamin

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Laki-Laki	83	81.4	81.4	81.4
	Perempuan	19	18.6	18.6	100.0
	Total	102	100.0	100.0	

Diagnosis

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	STEMI	25	24.5	24.5	24.5
	NSTEMI	3	2.9	2.9	27.5
	UAP	74	72.5	72.5	100.0
	Total	102	100.0	100.0	

Kematian Selama Perawatan SKA

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Tidak	95	93.1	93.1	93.1
	Ya	7	6.9	6.9	100.0
	Total	102	100.0	100.0	

Neutrophil to Lymphocyte Ratio

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<3	48	47.1	47.1	47.1
	3-5	27	26.5	26.5	73.5
	>5	27	26.5	26.5	100.0
	Total	102	100.0	100.0	

Rehospitalisasi Paska Perawatan SKA

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Tidak	99	97.1	97.1	97.1
	Ya	3	2.9	2.9	100.0
	Total	102	100.0	100.0	

Hipertensi

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Tidak	87	85.3	85.3	85.3
	Ya	15	14.7	14.7	100.0
	Total	102	100.0	100.0	

Diabetes Mellitus

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Tidak	91	89.2	89.2	89.2
	Ya	11	10.8	10.8	100.0
	Total	102	100.0	100.0	

Lampiran 2. Tabel Uji Hubungan NLR dengan Kematian Pada SKA

Symmetric Measures

		Value	Asymptotic Standardized Error[a]	Approximate T[b]	Approximate Significance
Ordinal by Ordinal	Gamma	.710	.207	2.074	.038
	Spearman Correlation	.243	.093	2.505	.014[c]
Interval by Interval	Pearson's R	.253	.096	2.620	.010[c]
N of Valid Cases		102			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

Lampiran 3. Tabel Uji Hubungan NLR dengan Rehospitalisasi Pada SKA

Symmetric Measures

		Value	Asymptotic Standardized Error[a]	Approximate T[b]	Approximate Significance
Ordinal by Ordinal	Gamma	-.486	.381	-1.116	.264
	Spearman Correlation	-.093	.070	-.929	.355[c]
Interval by Interval	Pearson's R	-.096	.063	-.968	.335[c]
N of Valid Cases		102			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.