Diabetes Metab Syndr . 2020 Apr 27;14(4):481-487. doi: 10.1016/j.dsx.2020.04.029.

Online ahead of print.

Neutrophil-to-lymphocyte Ratio Is a Predictor of Renal Dysfunction in Japanese Patients With Type 2 Diabetes

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PMID: 32388325 DOI: 10.1016/j.dsx.2020.04.029

Abstract

Background: Neutrophil-to-lymphocyte ratio (NLR) has been widely evaluated as a biomarker in various medical and surgical prognoses, but its usefulness in diabetic kidney disease is not yet known.

Methods: This prospective observational study included outpatients, comprised of 184 men aged 73 ± 11 (mean ± standard deviation) years and 174 women aged 76 ± 10 years at baseline, from a rural hospital. We examined the relationship between baseline NLR calculated by analyzing the differential leukocyte counts in the complete blood count and the 2-year estimated glomerular filtration rate (eGFR) decline rate (i.e. 2-year eGFR-baseline eGFR) ∗100/baseline eGFR. Rapid eGFR decline rate was defined as a value < -25%.

Results: Multiple linear regression analysis using rapid eGFR decline rates as objective variables, adjusted for confounding factors as explanatory variables, showed that NLR (β = 0.138, p = 0.007) as well as presence of antidyslipidemic medication, hemoglobinA1c, and urinary albumin excretion stage were significantly and independently associated with a rapid eGFR decline rate. The multivariate-adjusted odds ratios (95% confidence interval) of the 2nd and 3rd tertiles of baseline NLR for rapid eGFR decline rate were 3.62 (0.70-18.7) and 8.03 (1.54-41.9), respectively. Multivariate-adjusted mean eGFR (95% confidence interval) values after 2 years categorized by tertile of baseline NLR were: 1st, 63.9 (61.8-66.1); 2nd, 60.8 (58.7-62.9); and 3rd, 58.9 (56.8-61.0).