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HIGH NEUTROPHIL/LYMPHOCYTE RATIO PREDICTS RENAL FUNCTION DECLINE IN MULTI-ETHNIC ASIANS WITH TYPE 2 DIABETES – A LONGITUDINAL COHORT STUDY

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Mei Chung Moh,[1] Serena Low,[1] Yi-Ming Shao,[1] Tavintharan Subramaniam,[1] Chee Fang Sum,[1] Su Chi Lim[1,2,3]
[1]Alexandra Health Pte Ltd / Khoo Teck Puat Hospital, Singapore
[2]Saw Swee Hock School of Public Health / National University Hospital, Singapore
[3]Lee Kong Chian School of Medicine / Nanyang Technological University, Singapore

OBJECTIVES
We evaluated the utility of baseline neutrophil/lymphocyte ratio (NLR) as a predictor of renal function decline in a multi-ethnic Asian cohort with type 2 diabetes (T2D), and the mediatory effect of extracellular water/total body water (ECW/TBW) ratio.

METHODOLOGY
Adults with T2D (n = 1,224) were recruited by the DKD-onset and progression risk factors (DORIS) study, and prospective clinical data were extracted from the electronic health record. Cox regression analyses examined the associations between NLR and renal function decline defined as estimated glomerular filtration rate decline of ≥40%. Improvements in risk discrimination were assessed by Harrell's c-statistics. The mediatory role of ECW/TBW ratio estimated by bioimpedance method was assessed using binary mediation.

RESULTS
Compared with those with stable renal function, elevated NLR levels were observed in individuals who experienced renal function decline over a 1.8-year follow-up period. NLR was associated with the renal outcome in the unadjusted cox model (hazard ratio:1.39, 95% CI:1.23–1.57, p<0.001), and the association persisted after covariate adjustment (hazard ratio:1.38, 95% CI:1.19–1.59, p<0.001). Addition of NLR to a multivariable model consisting of demographics, T2D duration, metabolic and renal parameters, and use of antihypertensive medications significantly improved risk discrimination (p=0.030). The ECW/TBW ratio mediated 19.9% of the indirect effect of NLR on renal function decline.

CONCLUSION
Systemic inflammation as reflected by increased NLR is associated with renal function decline in multi-ethnic Asian adults with T2D, mediated by the presence of excess extracellular fluid. Hence, treatment strategies to ameliorate chronic inflammation and fluid overload may potentially attenuate renal function deterioration in T2D.