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## **The role of neutrophil/lymphocyte ratio as a new paradigm to determine hemodialysis initiation**

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**Objectives:** There are still controversies about the timing of initiation of the dialysis in patients with chronic kidney disease although absolute and relative indications have been well established. This study underwent to evaluate whether neutrophil/lymphocyte ratio (NLR) could be used as an important index of dialysis initiation by comparing the other clinical presentations and biochemical findings.

**Methods:** We retrospectively evaluated the medical records of patients to start chronic maintenance hemodialysis from January 2011 to December 2016 in our institutions. We compared laboratory findings of the last 3 months with those of just before timing of dialysis initiation. Patients with acute infection, using steroid or immunosuppressive agent use, and undergoing acute hemodialysis for acute kidney injury were excluded.

**Results:** Total 300 patients were included. The mean age was 61 years old. The mean estimated glomerular filtration rate by MDRD was  $5.93 \pm 2.78$  (ml/min/1.73m<sup>2</sup>) at the time of hemodialysis, whereas it was  $7.86 \pm 3.28$  (ml/min/1.73m<sup>2</sup>) 3 months before hemodialysis ( $p < 0.001$ ). The mean NLR significantly increased from  $2.50 \pm 1.02$  to  $4.32 \pm 2.08$  ( $p < 0.001$ ) in this duration. We found significant correlations between NLR and hemoglobin ( $r = -0.523$ ,  $p < 0.001$ ), serum albumin level ( $r = -0.685$ ,  $p < 0.001$ ), serum phosphorus level ( $r = 0.465$ ,  $p < 0.001$ ), total CO<sub>2</sub> level ( $r = -0.361$ ,  $p < 0.012$ ), and CRP level ( $r = 0.458$ ,  $p < 0.001$ ). In addition, patients undergoing planned dialysis through prepared arm vascular access showed significantly lower NLR than those of emergency dialysis requiring Permcath or temporary catheter ( $3.58 \pm 1.55$  vs.  $4.75 \pm 2.23$ ,  $p < 0.001$ ) although eGFR was not different between two groups. Lower hemoglobin, total CO<sub>2</sub>, albumin, sodium and calcium level was shown in patients undergoing emergency dialysis, compared with patients using planned arm vascular access ( $p < 0.001$ ,  $p = 0.002$ ,  $p < 0.001$ ,  $p = 0.006$ , and  $p = 0.002$ , respectively).

### **Conclusions:**

In conclusion, NLR might be used valuable marker in CKD patients when clinician consider the initiation of renal replacement therapy or prepare vascular access.