Category : **Respiratory: ARDS**

A132 - *Naive t and b cells in covid-19 patients*

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Introduction:

COVID-19 patients with acute respiratory distress syndrome (ARDS) have an immune imbalance when systemic inflammation and dysfunction of circulating T and B cells lead to a more severe disease. TREC (T cell receptor excision circle) formed during maturation of naive T cells in the thymus and KREC (kappa-deletion recombination excision circle) developed during maturation of naive B cells in bone marrow. Using TREC/KREC analysis, we studied the level of naive T and B cells in peripheral blood of COVID-19 patients.

Methods:

TREC/KREC analysis was performed by multiplex real-time quantitative PCR on a DNA samples of peripheral blood. The total sample size was 36 patients from 18 to 45 years old; 10 (27.78%) patients had ARDS, and 4 (11.11%) of them did not survive.

Results:

Patients with ARDS differed from the non-ARDS group ones in reduced lymphocyte count ($p = 0.014$), increased neutrophil count ($p = 0.049$), and neutrophil-to-lymphocyte ratio (NLR) ($p = 0.002$). During days 6 to 20 of hospitalization, a higher NLR was detected in ARDS patients compared with non-ARDS patients (Figure 1A). Analysis of TREC/KREC levels both per 100 000 cells revealed significant differences: TREC/KREC values were lower in the group of ARDS patients; these differences persisted after adjustment for multiple comparisons (Figure 1B). The TREC/KREC levels were also lower in non-survivors than in survivors. TREC/KREC negatively correlated with NLR; the highest correlation was recorded for TREC per 100 000 cells (Spearman's rho = -0.726, $p = 1.0 \times 10E\text{-}06$, coefficient of determination $R^2 = 0.527$).

Conclusion:

Thus, TREC/KREC analysis is a potential prognostic marker for assessing the severity and outcome in COVID-19.
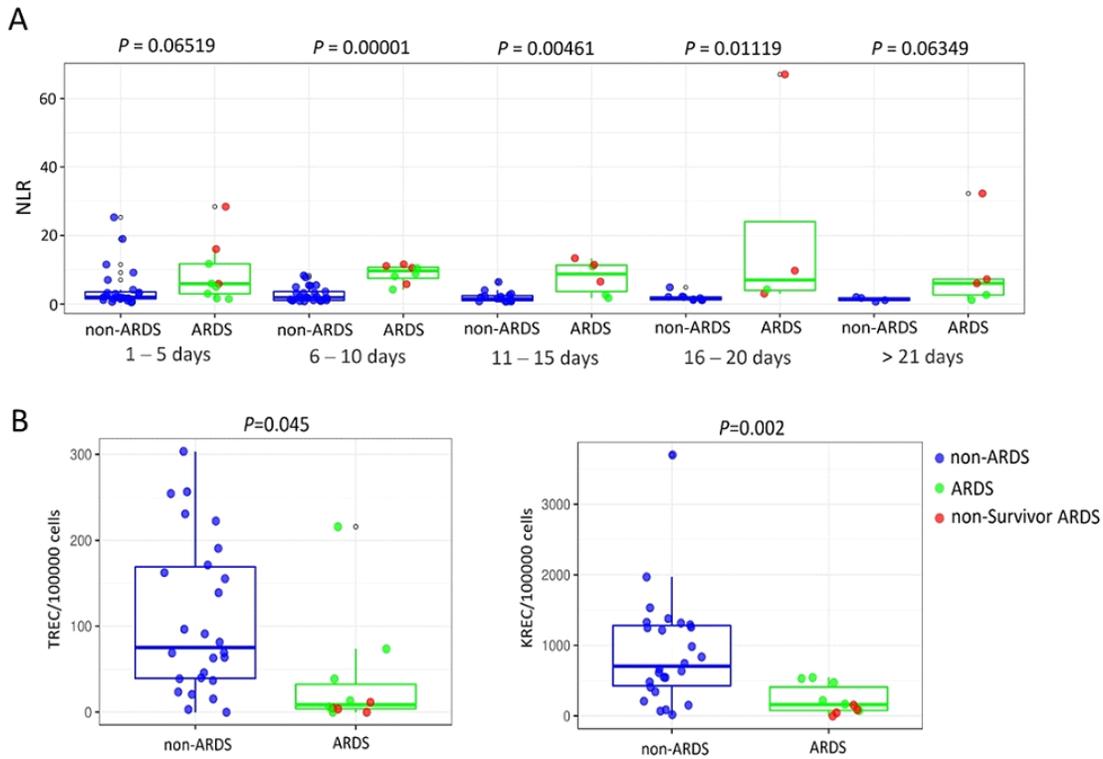
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Figure 1. A – Comparison of NLR between ARDS and non-ARDS COVID-19 patients. B – Comparison of TREC/KREC levels per 100 000 cells between ARDS and non-ARDS COVID-19 patients.