Background: Semaphorin has been found as a neuronal guidance molecule, but has recently been called ‘immune semaphorin’, as their critical role in immune cell activation, differentiation and migration has been revealed. In particular, class 4 semaphorin has been shown to contribute to lymphocyte activation and immune homeostasis.

Objectives: This study was aimed to investigate the expression of neuropilin-1 (NRP-1), the receptor of class 4 semaphorin, in the murine mouse model of systemic lupus erythematosus (SLE) and the patients with SLE and the correlation between the expression of NRP-1 and disease activity of SLE.

Methods: The expression of NRP-1 was measured in T cells in spleen and renal tissue in control mouse and TLR-7 agonist-induced lupus mouse by flow cytometry, PCR, and immunofluorescence (IF). CD4+ T cells from human peripheral blood were isolated to investigate the expression of NRP-1 in healthy control and the patients with SLE (n=40).

Results: The frequency of NRP-1 positivity in CD4+ T cells in spleen was significantly higher in lupus mouse group (median [interquartile range]: 15.34 [14.84] %) compared to vehicle mouse group (4.0 [2.77%]). The quantitative analysis of fluorescence intensity in kidney stained for NRP-1 revealed the increased level in lupus group compared to vehicle group. The CD4+ T cells from peripheral blood mononuclear cells in the patients with lupus also showed significantly higher frequency of NRP-1 positive CD4+ T cells than those from healthy controls. Comparing the correlation of the expression of NRP-1 and disease activity with SLEDAI, C3, C4, and anti-DNA antibodies, the significant correlation between NRP-1 and disease activity markers were confirmed.

Conclusion: Our results demonstrate that higher expression of NRP-1 in CD4+ T cells and its significant correlation with disease activity of SLE. These results indicate that pathologic contribution of NRP-1 in the pathogenesis of SLE and potential of targeting NRP-1 for the treatment of SLE.

REFERENCES:

Disclosure of Interests: None declared

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