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AB0132

ALTERATIONS IN PERIPHERAL T-CELLS AND B-CELLS SUBSETS IN PATIENTS WITH SYSTEMIC LUPUS ERYTHEMATOSUS AND SJÖGREN'S SYNDROME UNDERGOING THERAPEUTIC PLASMA EXCHANGE OR IMMUNOADSORPTION

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Background: Systemic lupus erythematosus (SLE) and Sjögren's syndrome (SS) are systemic autoimmune diseases characterized by a broad spectrum of clinical manifestations and disease course. Alternative therapies such as therapeutic plasma exchange (TPE), immunoadsorption are recommended to the patients who lack a good response to standard therapy [1].

Objectives: Our observational study was to explore whether abnormalities in T-cells, B-cells and their subtypes were present in the patients who had TPE or immunoadsorption in patients with SLE and SS compared with healthy controls (HC).

Methods: Demographic, clinical variables and autoantibodies were recorded. Flow cytometry was used to establish the frequencies of lineage subsets. Monoclonal antibodies against 21 surface markers such as CD3, CD4, CD8, were used to distinguish and evaluate T-cells' and B-cells' subpopulation. SLE activity was measured using systemic lupus erythematosus disease activity index (SLEDAI). Comparisons between subgroups were undertaken using paired T-test, Mann-Whitney U test and ANOVA.

Figure 1. Altered expression of CD4⁺ T-cell subsets in the patients with SLE and SS after treated with plasma exchange or immunoadsorption

Results: 6 SS patients and 1 SLE patient underwent immune adsorption, while the other 5 SLE patients had plasma exchange all for three times. There

was no significant difference among SLE, SS and HC in the proportion of T-cells and B-cells. The proportion of CD3⁺CD19⁺CD27⁺IgD⁺ B-cells were reduced in SLE, while CD3⁺CD4⁺CD25⁺CD127⁺ T-cells were elevated in SS. The proportion of CD3⁺CD4⁺CD45RA⁺CCR7⁺T-cells were increased ($p = 0.045$), while CD3⁺CD4⁺CD25⁺CD127⁺ T-cells were declined ($p = 0.027$) and CD3⁺CD4⁺CXCR5⁺PD-1⁺ T-cells went down after the therapies ($p \leq 0.030$). The proportion of CD3⁺CD19⁺IgD⁺IgM⁺CD27⁺CD38⁺ B-cells was also reduced after TPE or immunoadsorption ($p = 0.032$) with ANA titers and IgG decreasing dramatically. SLEDAI scores were reduced after the therapy in SLE patients.

Conclusion: The T-cell and B-cell's profiles were proved to have alteration after TPE or immunoadsorption which shed light on the complicated mechanisms of these relatively novel therapy in SLE and SS.

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AB0133

INCREASED SOLUBLE SEMAPHORIN 4D/CD100 IN THE PLASMA OF SJÖGREN'S SYNDROME AND ITS EFFECTS ON HUMAN SALIVARY GLAND CELL AND CD4⁺ T CELL

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Background: Semaphorin 4D (SEMA4D) / CD100, known as a subfamily of axonal guidance proteins, has also been reported to act as an immunoregulator in several infectious and inflammatory diseases [1]. Sjögren's syndrome (SS) is a systemic autoimmune disease that primarily affects the exocrine glands by infiltrated lymphocytes resulting in dryness of mouth and eyes. IL-17 was reported to impair the integrity of tight junction barrier and attenuate the expression of aquaporin 5 (AQP5), causing salivary gland dysfunction in SS [2].

Objectives: This study was aimed to evaluate the role of SEMA4D in patients with SS and investigate the effect of SEMA4D on human salivary gland epithelial cell (SGEC) and T cell.

Methods: Soluble SEMA4D levels in plasma were measured by enzyme-linked immunosorbent assay (ELISA) from patients with SS, non-SS sicca and healthy controls. Immortalized human SGECs, originated from acini (NS-SV-AC) and duct (NS-SV-DC), were used to evaluate the effects of SEMA4D. CD4⁺ T cells from human peripheral blood were isolated to determine the secretion of cytokines in response to SEMA4D. IFN- γ and IL-17 were used to determine the effects on AQP5 expression of SGEC.

Results: The levels of soluble SEMA4D in plasma were increased in patients with SS (median [interquartile range]: 1221.3 [393.5] pg/mL) compared to non-SS sicca (940.2 [355.1] pg/mL, $p = 0.006$) or healthy controls (909.5 [108.0] pg/mL, $p < 0.0001$). The levels of soluble SEMA4D in plasma were correlated with the levels of several autoantibodies including anti-SSA (Spearman's $\rho = 0.358$, $p = 0.006$), anti-SSB ($\rho = 0.350$, $p = 0.007$), and anti-muscarinic receptor 3 (M3R) Ab ($\rho = 0.495$, $p < 0.001$), and also correlated with total IgG ($\rho = 0.431$, $p = 0.002$). SEMA4D-stimulated SGECs showed decreased expression of tight junctions such as occludin and ZO-1. CD4⁺ T cells secreted IFN- γ ($p = 0.025$), IL-17 ($p = 0.028$), and IL-21 ($p = 0.007$) with SEMA4D stimulation. IFN- γ and IL-17 decreased AQP5 expression in SGECs.

Conclusion: SEMA4D contributed to decreased expression of tight junction in SGECs. SEMA4D induced production of IFN- γ and IL-17 in CD4⁺ T cells and these cytokine decreased AQP5 expression in SGECs.

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