THE EGYPTIAN JOURNAL OF IMMUNOLOGY Vol. 13 (2), 2006
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The role of T helper cell subsets in pathogenesis of Systemic Lupus Erythematosus and their relation to disease activity

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The chemokine receptors expression dictates the spectrum of action of chemokines. One possible role of chemokines in autoimmune diseases, such as Systemic Lupus Erythematosus (SLE), is to facilitate the migration of lymphocytes to specific target organs thus accounting for the accumulation of T-cells in different organs, and subsequent disease manifestations. In the present study we investigated the surface expression of the chemokine receptors CXCR3 and CCR5 on CD4-positive T-helper lymphocytes in patients with active SLE, patients in remission, and in healthy subjects. Furthermore, a possible correlation between these cytokine receptors and SLE disease activity index (SLEDAI) was investigated. The study included 48 patients; all met at least four of the 11 American College of Rheumatology (ACR) diagnostic criteria for SLE. They were subdivided according to their SLEDAI into 2 groups: active SLE group of 28 patients with SLEDAI (> or = 6), and 20 SLE patients in remission with SLEDAI (< 6). Twenty age and sex matching healthy subjects were included as controls. We found that patients in the active SLE group had significantly elevated the mean expressions of CXCR3 and CCR5 on the surface of CD4+ T-lymphocytes than in the SLE patients in remission and healthy controls. The SLE patients in remission were found to have substantial reduced CD4+ CXCR3+ expression in comparison to healthy controls. Interestingly, a significant positive correlation was found between SLEDAI and each mean level of CD4+ CXCR3 and CD4+ CCR5+ in all SLE patients. In conclusion, this study revealed that the surface expression of the chemokine receptors CXCR3 and CCR5 on CD4+ T cells were increased markedly in patients with active SLE more than SLE patients in remission and the healthy subjects, this increase correlated positively with the SLEDAI. A larger study should be conducted to examine the role of CXCR3 and CCR5 expression in predicting disease activity in SLE patients.