



**Isfahan University of Medical sciences**

**Faculty of Medicine**

**Department of Immunology**

**Thesis submeitted for the degree of Master of Science in Immunology**

**Expression of Th1 associated chemokine receptors on  
peripheral blood lymphocytes of women with recurrent  
spontaneous abortion (RSA) before and after  
immunotherapy**

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## Summery

**Background:** RSA can be defined as occurrence of three or more clinically detectable pregnancy failure before the 20th weeks of gestation from the last menstrual period and less than 500g of fetal body weight. The aim of this study was to examine whether immunotherapy for recurrent spontaneous abortion (RSA) using paternal lymphocytes induced any changes in the expression of T-helper (Th)1- and Th2-related chemokine receptors expressed on distinct subsets of CD4<sup>+</sup> T helper and CD8<sup>+</sup> T cytotoxic (Tc) cells. The effect of cell activation on the expression of chemokine receptor was also investigated.

**Materials and methods:** A total of twenty-seven primary recurrent aborters of unknown etiology were screened for the flowcytometric evaluation of CCR5, CXCR3, CCR3, or CCR4 expression on T cells before and after immunotherapy. Twenty-seven healthy multiparous women with no history of abortion were selected as control group. Activation experiments were performed on this group.

**Results:** It was revealed that the expression of CCR4 on CD4<sup>+</sup> T cells increased significantly after immunotherapy ( $P = 0.001$ ). However, immunotherapy caused no changes in the expression of other studied chemokine receptors. The influence of immunotherapy on the balance of

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Th1/Th2 or Tc1/Tc2 immune response was evaluated in RSA patients by dividing the percentages of CXCR3<sup>+</sup> by CCR4<sup>+</sup> T cells. A decrease in the Th1/Th2 ratio was detected in immunized RSA women ( $P = 0.05$ ); however no significant change was identified in the Tc1/Tc2 ratio after immunotherapy. The activation experiments showed a significant increase in the expression of CXCR3 and CCR3 ( $P = 0.002$  for CXCR3 and  $P = 0.001$  for CCR3). CCR5 did not showed any significant change on the CD4 T cells, while, the expression of CCR4 showed significant decrease after activation of CD4 T cells ( $P= 0.025$ ).

**Conclusion:** The results of present study provide evidences in effectiveness of paternal leukocyte immunotherapy in primary RSA women. Immunotherapy induced modulation of immunity in the immunized women, results in a shift from Th1-associated chemokine receptor to a Th2- type expression after immunotherapy.

**Key words:** Chemokine receptor, Cytotoxic T cell, Helper T cell, lymphocyte immunotherapy, Recurrent Spontaneous Abortion

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