

Induction of ICAM-1 and ICAM-3 in Women with Recurrent Pregnancy Loss

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Abstract

Background: Recurrent pregnancy loss (RPL) has been found to be associated with increase in the pro-inflammatory cytokines which cause up-regulation of inflammatory mediators including cell adhesion molecules (CAMs) that might act in aggravation of this pathological process.

Objective: To find out whether there is a relation between the pathology of RPL and the expression of intracellular adhesion molecule-1 (ICAM-1) and ICAM-3 at the feto-maternal interface in these patients.

Methods: Immunohistochemistry technique was performed to detect and determine the expression of ICAM-1 and ICAM-3 using paraffin embedded sections of curate samples obtained from 40 women, who were divided into three groups: 24 women with RPL, 10 women with abortion for the first time, and 6 women with induced abortion.

Results: The levels of the expression of both endothelial ICAM-1 and leukocytes ICAM-3 at the feto-maternal interface were found to be significantly up-regulated in the first group as compared with the second and the third groups ($p=0.001$), with a highly significant positive correlation between these two parameters ($r=0.927, p<0.01$).

Conclusion: ICAM-1 and ICAM-3 might play an important role in the pathology of RPL by increase adherence and recruitment of inflammatory cells at the feto-maternal interface ending with a pregnancy failure.

Key words: Inter Cellular Adhesion Molecule-1 and Inter Cellular Adhesion Molecule -3, Recurrent pregnancy loss.

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Introduction

Cell adhesion molecules (CAMs) mediate cell-cell interactions and play an important role in cell differentiation⁽¹⁾, in the organization of the extracellular matrix and in the recruitment and aggregation of leukocytes from the circulation⁽²⁾. The immunoglobulin superfamily of which intercellular adhesion molecule (ICAM)-1 and ICAM-2 are members is the most widely distributed family of cell adhesion molecules. ICAM-1 is expressed on leukocytes, epithelial and endothelial cells, ICAM-2 is mainly found on resting endothelial cells and ICAM-3 is constitutively expressed by all resting leukocytes⁽³⁾.

Cell adhesion molecules are present in human endometrium, where they may play a role in regulating leukocyte trafficking into this tissue^(2, 4, 5). It is recognized that the normal endometrium has a population of leukocytes, including macrophages, T-lymphocytes and granulocytes, which are important in the physiology of the endometrium. Furthermore, T cells form 10-15% of lymphocytes in early pregnancy deciduas⁽⁶⁾, while B cells are professional cells that produce immunoglobulines; their count and population in the endometrium do not change through out menstruation and during pregnancy, and the second major decidual leukocyte population consists of the monocytes/macrophages⁽⁷⁾.

The expression of ICAM-1 in human endometrium can be stimulated by cytokines including interferon (IFN)- γ , tumor necrosis factor (TNF)- α and interleukin (IL)-1 β ^(4, 8, 9).

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