

## THE REPRODUCTIVE COUPLE AS A COMMON IMMUNOGENETIC SYSTEM, WHICH DETERMINS THE SUCCESS OF FERTILIZATION AND PREGNANCY

Emiliana Konova

<sup>1</sup>*Center for Reproductive Health, Medical University, Pleven, Bulgaria*

<sup>2</sup>*Medical Center "CIRM", Pleven, Bulgaria*

Reproductive failure is medical, emotional and demographic problem concerning significant part of the couples in the industrial countries. Maternal immune system is a key regulator of the periconception events by maternal tract cytokines and immune cells. Decidual cells at the site of implantation are 70% decidual stromal cells and 30% infiltrated immune cells - 50-70% uNK cells; 20–30 % macrophages; 10–15% T cells, mainly Tregs, 2% dendritic cells. By the secretion of cytokines, angiogenic factors, growth factors, etc., decidual immune cells contribute to the processes of decidualization and endometrial receptivity, trophoblast invasion, vascular growth, placental formation and immune tolerance to the foetus.

Traditionally, the diagnostic approaches for the infertile couples include separate tests for the male and female partner. We propose a new diagnostic approach which perceives the infertile couple as a common immunogenetic system, which determines the success of fertilization and pregnancy: 1/ Immune modulating effects of seminal fluid, containing the classical Ia, non-classical Ib HLA antigens and minor antigens (H-Y) as well as more than 20 cytokines, chemokines, and growth factors, which perform a lot of regulatory and protective functions. 2/ Role of infections in the seminal fluid which transferred to the mother, impair the immune tolerance and could be an etiological factor for pregnancy loss or development of preeclampsia. 3/ Role of receptor-ligand combinations between activating and inhibiting killer immunoglobulin-like receptors (KIRs) of uNK and HLA-C molecules of the male partner which determine the functions of uNK. Combinations which fail in activation of uNK cells are attributed to pathogenesis of preeclampsia, fetal growth restriction and recurrent pregnancy, which can be explained by poor angiogenesis.