AB029. Physiological expression of HLA-G and pregnancy

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Abstract: Human leukocyte antigen (HLA)-G is a nonclassical major histocompatibility complex (MHC) class I molecule with immune-modulatory properties. Such molecule predominantly possesses tolerogenic and anti-inflammatory functions. Until now, it has been verified the existence of seven isoforms of HLA-G, being that four are membrane-bound isoforms and the other three are soluble isoforms. During physiological pregnancy, it should be noted that HLA-G is expressed in high levels by extravillous cytotrophoblasts. It has been proposed that in the course of pregnancy period HLA-G induces fetus immune tolerance through direct binding to the inhibitory receptors immunoglobulin-like transcript (ILT)-2 present on lymphoid and myelomonocytic cells, and ILT-4 expressed by dendritic cells, macrophages and monocytes. In addition, in this context, the killer cell immunoglobulin-like receptor expressed by natural killer (NK) cells is also an HLA-G-specific receptor. Therefore, HLA-G induces the maintenance of maternal-fetal tolerance at different stages of the immune response, such as in differentiation, proliferation, cytolysis and cytokine secretion, given that it can directly interact with different immune cell subpopulations. Furthermore, by indirect mechanisms HLA-G can express the nonclassical HLA class I molecule HLA-E, which directly binds peptides derived from HLA-G. Consequently, HLA-E can interact with the inhibitory receptor CD94/NKG2A (present on NK cells and T lymphocytes) resulting in inhibition of cytolysis. However, despite this some controversies can be found in the literature about this subject. We expect that the original results of our ongoing research can provide new and relevant explanations concerning the role of HLA-G during pregnancy. We aim to publish them soon in a scientific journal.

Keywords: Human leukocyte antigen-G (HLA-G); pregnancy; neonatal; physiology; immunology

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