

Abstract

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Oxidative stress and autoimmune response in the infertile woman.

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BACKGROUND: There is convincing evidence that the establishment of a chronic inflammatory response, together with the presence of a local oxidative environment, could play an important role in the etiology and the progression of several human diseases.

DISCUSSION: In the reproductive system, pathologies such as endometriosis, polycystic ovary syndrome, tubal obstruction, preeclampsia and recurrent abortions are related to the presence of inflammatory cytokines (TNF-alpha, IFN-gamma, IL-1) and to high levels of free radicals that may damage biological molecules, such as lipids, proteins or DNA. Membrane lipids become oxidized and some of their products (malondialdehyde, acetaldehyde, hydroxynonenal) chemically modify proteins. These modified proteins consequently can change their function, antigenicity and therefore become implicated in immunological deleterious reactions associated with inflammatory and/or autoimmune injury.

CONCLUSION: An altered protein function and the presence of circulating autoantibodies to new epitopes, such as malondialdehyde bound to proteins, could block some membrane surface antigens with a receptor function in the reproductive system. This explains how sperm capacitation, oocyte fertilization, or embryo implantation may be inhibited as a consequence of oxidative stress and chronic inflammatory conditions.

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