PARTICIPATION OF HEAT SHOCK PROTEINS IN THE PATHOGENESIS OF AUTOIMMUNE DISEASES

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The heat-shock proteins (Hsp) – phylogeneticaly old intracellular proteins that are found in all cells with nucleus. The capacity to connect with intracellular peptides and taking part in the different cellular processes (proteins transport, antistress cells protection etc.) specifies the variability of their functions.

The aim of the study was the analysis of the current literature on involvement of heat shock proteins in the pathogenesis of autoimmune diseases.

The results of the work. Modern researches have set that the adjuvanticity of different types of Hsp is answered for actually not by Hsp, but their complexes with peptides (Hsp-peptide complex, Hsp-pc). It is shown that the Hsp can bind virtually any protein fragments, both endogenous and exogenous, both natural and model. Macrophages, dendritic cells, fibroblasts and other antigen presenting cells (APCs), with the exception of B-lymphocytes, capture Hsp-pc, isolate from them antigenic peptides and present them on the surface of immune effector cells in complex with MNS class I and II.

APC activated Hsp-peptide complexes induce activation of cellular and humoral immune responses against antigens of tissues from which they are allocated Hsp-MS, which creates serious preconditions for development of an autoimmune reaction. Activation occurs by proliferation of CD8+ cytotoxic and CD4+ lymphocytes, stimulation of NK-response. This process is accompanied by synthesis of a wide range of pro-inflammatory cytokines, especially interleukin-12 and costimulatory molecules.

Conclusions. Heat shock proteins can actively participate in the development of autoimmune diseases such as rheumatoid arthritis, diabetes, endocrine ophthalmopathy and other by formation of complexes with peptides.