COMPARATIVE ANALYSIS OF HSP70 AND HSP90ALPHA EXPRESSION IN NASAL EPITHELIAL CELLS OF PATIENTS WITH CHRONIC RHINOSINUSITIS WITH NASAL POLYPS

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Chronic rhinosinusitis with nasal polyps (CRSwNP) is characterized by a prolonged inflammation of the sinonasal tract with the development of soft, non-cancerous outgrowths on the nasal and paranasal mucosa. The disease is associated with the high prevalence in European population and has a significant social and economic burden. There is strong evidence that epithelial integrity and mucosal function in upper airways is affected in CRSwNP. Under normal circumstances, the mucosal integrity is maintained by intact nasal epithelial cells (NECs). They create a passive barrier, preventing the penetration of microorganisms deep into the tissue. Furthermore, NECs are able to secrete cytokines, participating in the regulation of inflammation intensity in CRSwNP. Converging lines of evidence indicate that NECs can undergo epithelial-mesenchymal transition, contributing to tissue remodeling in CRSwNP. Thus, the survival of NECs is of crucial importance for protecting nasal and paranasal mucosa in CRSwNP. Heat shock proteins (HSPs) or chaperones are one of the factors that contribute to the survival of cells in unfavorable conditions. This group of proteins is involved in protein folding and re-folding of damaged or misfolded proteins. Expression of inducible chaperones HSP70 and HSP90alpha is observed in response to high temperature, oxidative stress, endoplasmic reticulum stress, etc. Changes in HSP70 and HSP90alpha expression patterns in NECs of patients with CRSwNP are poorly covered in scientific literature.

The aim of our study was to compare HSP70 and HSP90alpha expression in NECs of patients with CRSwNP and healthy individuals. According to the design of this study, specimens of nasal polyp tissue were collected from 7 patients with CRSwNP during surgery. Control samples of nasal tissue were collected from 7 healthy individuals undergoing surgery due to deviated nasal septum. Paraffin-embedded tissues were used to prepare microslides stained using antibodies to HSP70 and HSP90alpha purchased from *Thermo Fischer Scientific* (the United Kingdom). Visualization was based on 3,3'-diaminobenzidine staining. Brown staining was considered positive.

We observed weak expression of both HSP70 and HSP90alpha in NECs of individuals from the control group. Expression was virtually absent in some NECs. In contrast to control subjects, strong positive HSP70 and HSP90alpha staining was revealed in NECs of patients with CRSwNP. The amount of both HSP70- and HSP90alpha-positive NECs was higher in patients with CRSwNP. Comparative analysis of HSP70 and HSP90alpha expression showed that HSP70 upregulation in NECs was more pronounced in CRSwNP compared with HSP90alpha. We believe that overexpression of the chaperones studied in this research has a compensatory character and aims at re-folding of oxidative modified proteins, whose accumulation is observed in CRSwNP.

HSP70 and HSP90alpha overexpression in NECs is found in CRSwNP. Our finding suggest that HSP70 expression is more pronounced compared with HSP90alpha, indicating a more important role of the former in CRSwNP pathogenesis.

THE IMPACT OF DIFFERENT DRUGS ON PROTEINS MODIFICATION AND THEIR INTERACTION WITH GALECTINE 3 IN RATS WITH MYOCARDIAL ISHEMIA

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Coronary heart disease is one of the most threatening pathological conditions leading to a deterioration in the quality of life and death. Oxidative stress is considered the main pathogenetic factor of acute myocardial infarction and its subsequent complications. There is increasing evidence that myocardial ischemia (MI), is accompanied by the development of carbonyl-oxidative stress (COS), irreversible oxidative modification of proteins (OMP) and increase of the advanced glycation end products