

The role of heat shock proteins in the inflammatory state of vernal keratoconjunctivitis

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The aim of the study was to analyse the role of heat shock proteins (HSPs) in vernal keratoconjunctivitis (VKC), a recurrent allergic ocular inflammatory disease.

We evaluated the expression of some HSPs (Hsp10, Hsp27, Hsp40, Hsp60, Hsp70, Hsp90) in the mucosal biopsies of VKC patients by immunohistochemistry, and in conjunctival cells cultures treated with inflammatory stimuli (IL-1 β , histamine, IL-4, TNF β , UVB irradiation) by western blotting.

Immunohistochemical analysis revealed that Hsp10, Hsp27, Hsp40, Hsp70 and Hsp90 expression was significantly increased in VKC whereas the Hsp60 level was unaltered.

In vitro induction by inflammatory stimuli in Chang epithelial conjunctival cells revealed that Hsp70 protein expression was significantly increased in epithelial cells line after 4-10 h from histamine and IL-4 stimulation. The same molecule was also overexpressed in conjunctival fibroblast cultures after TNF β treatment. Hsp90 protein level was increased in the same cell cultures by IL-1 β at 4-10-24 h. The Hsp40 protein expression was increased both in epithelial and fibroblast cultures induced by all inflammatory stimuli.

Moreover, UVB irradiation significantly increased Hsp90 expression in primary fibroblast culture and Hsp27 in conjunctival epithelial cells after 10 hours.

These results indicate that HSPs levels increase in VKC. In particular, Hsp40 expression is up-regulated by all the typical inflammatory stimuli involved in VKC pathogenesis. The specific role of each one of these chaperonins to further induce or counteract inflammation need to be further investigated.