

Complex antibody profile changes in an experimental autoimmune glaucoma animal model

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PURPOSE: Increased serum antibodies against heat shock protein 27 (HSP27) have been identified in patients with glaucoma. Immunization with HSP27 caused retinal ganglion cell (RGC) loss in animals. The authors analyzed whether HSP27 immunization not only causes RGC loss but also affects systemic antibody patterns.

METHODS: Rats were immunized with HSP27 and were surveyed for 4, 5, and 6 weeks (groups 1-3) . Control animals were humanely killed after 6 weeks (group 4) . Intraocular pressure was measured before and 2 and 4 weeks after immunization. Fundus images were taken at the same time. Retinal flatmounts were prepared, and Brn-3a labeled RGCs were counted. Serum was collected during the study to detect antibody patterns against retinal antigens through Western blot analysis and mass spectrometry techniques. Patterns were analyzed by multivariate statistical techniques, and biomarkers were identified with the use of mass spectrometry.

RESULTS: No significant changes in intraocular pressure were observed, and no fundus abnormalities were noted. The animals immunized with HSP27 showed lower RGC density than controls (P < 0.05).
CONCLUSIONS: After immunization with HSP27, animals showed IOP-independent RGC loss and changes in serum antibody patterns. Thus, this model might be a beneficial approach to study the development and effects of anti-retinal antibodies and their involvement in RGC loss.

Clinical paper

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