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Role for N-acetylneuraminic acids in the pathogenesis of glaucoma development

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The aim of this work was to study the content of total and lipid-bound neuraminic (sialic) acid in erythrocyte membranes in patients with glaucoma. The results of our studies showed that glaucoma is accompanied by an increase in the total content of neuraminic acid obtained from glycoproteins and glycolipids. A study of the content of gangliosides made it possible to detect a decrease in all fractions of gangliosides, which is associated with the hydrolytic breakdown of gangliosides and with the increase of free neuraminic acid. The data obtained are interpreted with the destruction of membranes. Experiments were carried out in blood erythrocyte membranes of patients with glaucoma who are being treated in the eye clinic. All patients underwent a standard ophthalmologic examination. An increase in the level of neuraminic acids in biological fluids reflects the processes of destruction of membrane structures of the brain tissue. It seems to us that an increase in the content of free sialic acids in the blood plasma and erythrocyte membranes may be the reason for the cleavage of neuraminic acids from glycoproteins and gangliosides. Thus, the results of our study revealed a role for N-acetylneuraminic acids in the pathogenesis of glaucoma development.

Recent Publications

1. Barot M, Gokulgandhi M R and Mitra A K (2011) Mitochondrial dis¬function in retinal diseases. Curr. Eye Res.; 36(12): 1069-1077.
2. Bizrah M and sCordeiro M F (2011) Glaucoma and Alzheimer's disease in the elderly. Aging Health; 5: 719-73.
3. Frolov M A, Slepova O S, Lovpache Dzh. N and Frolov A M (2013) The role of apoptosis in the pathogenesis of glaucoma lesion of the optic nerve with primary open-angle glaucoma. Oftal'mologiya; 10(4): 5-10.

Biography

Hasmik Zanginyan is an Associate Professor in Institute of Molecular Biology NASRA. She has research interest in endothelial cells.

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