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Is clinical course of optic neuropathy associated with oxidative damage and dynamics of antioxidant response?

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Optic neuropathy is recognized one of the most frequent causes of vision loss, which 85% of them are in no arterial anterior ischemic optic neuropathy (NAION) form. Glaucoma –another major form of optic neuropathy represents a group of neurodegenerative diseases characterized by structural damage to the optic nerve and the slow, progressive death of retinal ganglion cells. The nervous system is rich in lipids and oxidative stress plays a crucial role in neurologic damage. We carried out two multicenter case control studies in order to evaluate the oxidative stress profile in large series of glaucoma and NAION patients. In both studies, a comprehensive systemic oxidation profile was evaluated in control and patient groups. In order to assess the oxidative stress, markers of this destructive process, main antioxidants, along with SOD and Gpx systems were studied. 8-hydroxy-2'-deoxyguanosine –marker of oxidative stress related DNA damage in urine, levels were also determined in the NAION study. In both studies, oxidative stress parameters varied significantly in the patient groups. For vitamin E and MDA, extremely significant increases were found. Significant correlations have been found between clinical findings and oxidative stress parameters. In these studies, not only clear evidences were obtained regarding optic neuropathy-oxidative stress connection, but certain interactions of antioxidants that have unique neurohormone- like activities and regulatory mechanisms were pointed out as well. A more comprehensive understanding of oxidative damage and response dynamics will enable us to determine more efficient diagnosis, follow-up and treatment strategies and facilitate to answer important questions about optic neuropathies.

Biography

Engin KN is an ophthalmologist and PhD on Biochemistry. He has a strong focus on optic nerve and his areas of interest are glaucomatous neurodegeneration, oxidative stress, neuroprotection and Vitamin E. Currently, his review article "Alpha Tocopherol: Looking beyond an antioxidant" have been cited over 90 times. Along with other academic activities, he is author of 39 publications, 7 special lectures, more than 70 presentations, and he received 6 awards. He is member of ARVO, EVER, Society of Free Radicals and Antioxidants Research (Turkey). Since 2005, he has been serving as an active member of glaucoma division of Turkish Ophthalmology Society.

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