

# Global Ophthalmology and Glaucoma Conference

October 13-15, 2016 Kuala Lumpur, Malaysia

## Neuroprotective function of nerve growth factor

Lina Huang  
Jinan University, China

As an important component for the micro-environment, nerve growth factor (NGF) is an endogenous signal protein that can promote growth and proliferation of nerve. NGF is the earliest clearly discovered and discussed neurotrophic factor, it can maintain and promote the survival, growth, differentiation and executive function of the sympathetic nerve and sensory nerve cells from neural crest in central and peripheral nervous system, promoting the regeneration of the injured neurons. In addition, it is also involved in the regulating functions of immune, blood, endocrine and reproductive system. NGF functions by selectively combining with two kinds of specific target cell surface receptor- tyrosine kinase receptor (Trk A) or P75. There are two kinds of transportation of NGF: Anterograde along the axon to influence target cells, which is advantageous to transport the exogenous NGF to the damaged target Cell; and retrograde along the axon to influence its superior neurons. There are many optic nerve injury diseases or RGCs apoptosis diseases, such as glaucoma, diabetic retinopathy, retinitis pigmentosa, anterior ischemic optic neuropathy, optic nerve contusion, optic neuritis, etc. NGF plays with indications in this area. NGF functions in the development, differentiation, maturation of all layers of retina, and plays an important role in maintaining normal retinal physiological function. Studies have shown that application of exogenous nerve growth factor do protect optic nerve. When exogenous NGF is applied into the body, its activity and effects is related to drug delivery pathway and dosage. At present people do not think it directly effects on nerve cells, but forms complex with receptors and retrograde transport to recover damaged nerve.

lina\_h@126.com

## Recent advancements on magnetic resonance imaging of the visual pathway in glaucoma patients

Sabrilhakim Sidek  
Universiti Teknologi MARA, Malaysia

Glaucoma is an irreversible and broadened theory of the progressive neurodegenerative disease of the visual pathway. Anatomical changes reflecting damage to the optic nerve (ON) head and retinal nerve fiber layer (RNFL) are the basis for glaucoma diagnosis and evaluation. Recent studies have broadened the theory of the neurodegenerative process of glaucoma beyond the ON per se to involve the entire visual pathway using assessment methods utilizing newer and more advanced MRI techniques. These include volumetric studies, diffusion tensor imaging (DTI) and spectroscopy imaging. Previous morphological studies evaluated the volume changes in various specific structures in the brain in patients with glaucoma using MRI. Automated, semi-automated or manual techniques are applied for volumetric measurement. DTI is used to measure the properties of water diffusion. The changes in these measurements reflect the changes in tissue microstructure. The DTI evaluates optic neuropathy by measuring the changes of fractional anisotropy (FA) and mean diffusivity (MD) values along the visual pathway. Assessment of FA provides information on the structural integrity of the fibre tracts while MD shows the average motion of water molecules, independent of fibre direction. Spectroscopy imaging enables detection, identification and quantification of metabolites such as N-acetyl aspartate (NAA), choline (Cho) and creatine (Cr) in the brain tissue. This approach provides physiological and chemical information. Alteration in metabolite concentration associated with many diseases such as neurodegenerative disease, brain hypoxia, tumors and stroke. Changes in metabolite concentrations in the visual pathway related to glaucoma disease have been previously published, and these studies demonstrated various findings.

bhkimy\_7@hotmail.com