Summary

Glaucoma represents a group of neurodegenerative diseases characterized by structural damage to the optic nerve and slow, progressive death of retinal ganglion cells (RGCs). Although the most important trigger for progression of glaucomatous damage is an elevation of intraocular pressure (IOP), the exact mechanism remains unknown.

Current standard therapy for glaucoma is to lower the IOP by medication or surgery that may delay disease progression but does not alter retinal ganglion cells (RGCs) loss and axon degeneration. Therefore, treatment of glaucomatous neuropathy requires the preservation, protection, and rescue of RGCs; hence the name *NEUROPROTECTION* appeared which is defined as a therapeutic paradigm for slowing or preventing death of neurons, to maintain their physiological function.

Independent of the cause, neuroprotection is aimed at blocking primary destructive events or enhancing survival mechanisms of the retinal ganglion cells or optic nerve fibers. In glaucoma, neuroprotection offers a method for preventing the irreversible loss of those cells. An important advantage of the neuroprotective strategy is that it allows treatment of a disease for which the specific etiology is either unknown or differs among patients. This is particularly relevant to glaucoma, a heterogeneous group of disorders that share common characteristic morphological features of the optic nerve head and patterns of visual loss.

The concept of neuroprotection takes its origin from a research on chick's dorsal root ganglia resulted in the discovery of the prototypical neurotrophin nerve growth factor (NGF).

In the last 50 years since this discovery, the growth factor class has grown to include a wide variety of compounds with the ability to induce neurite outgrowth in injured neurons, or delay the death of these cells.

Also another drugs are still under clinical trials which induce neuroprotection or their neuroprotective effect discovered accidentally during trials like some anti glaucoma drugs which were aimed at lowering IOP and scientists discovered their neuroprotective effect.