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Neuroprotection in glaucoma: where are we?

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Today, the main approach for glaucoma management is to reduce the intraocular pressure (IOP) with the use of medications or surgery and thereby slow the progress of the retinal ganglion cells (RGCs) death and prevent vision loss. This strategy proved to be effective but not for all patients. A lot of questions are raised asking, what if the patients suffer normal tension glaucoma, what if he/she came late—as usually—and diagnosed at late stages when the functional loss has already occurred and the most important one is what if reducing IOP does not stop the disease progression? As neuroprotection is raising a hope for the treatment of the central nervous system diseases, around 500 drugs have been discovered and investigated in the laboratory research in the past few decades. Although the laboratory results have approved a wide range of approaches in glaucoma neuroprotection, the clinical field lacks the efficacy of those products. Indeed, the clinical trials have failed to demonstrate the effectiveness and the safety of using those candidates in glaucoma patients. RGC death and its prevention are the subjects of active neurobiological research. Although IOP lowering is still the mainstay of glaucoma treatment, neuroprotection and possibly neuroregeneration may become possibilities in the future. Ultimately, RGC loss must be stopped, and pharmacological neuroprotection for glaucoma is part of the pursuit of effective treatment modalities to improve long-term outcomes.

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