



Etiology, Causes and Latest Treatment for Glaucoma

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ABOUT THE STUDY

Glaucoma is a general eye condition in which fluid pressure in the eye rises to healthy levels in the eye. If it is untreated, it can damage the optic nerve and lead to loss of vision and blindness. It is a condition that damages the optic nerve of the eye. It gets worse over time it is often associated with the pressure in the eyes. Glaucoma tends to develop in the family. An increase in intraocular pressure, can damage the optic nerve, which sends images to the brain. As the damage condition of glaucoma can lead to permanent loss of vision or complete blindness within a few years.

Causes of glaucoma

Glaucoma is the result of damage to the optic nerve. As this nerve gradually deteriorates, a blind spot develops in the visual field. This nerve damage is usually associated with increased intraocular pressure. The increase in intraocular pressure is due to the accumulation of fluid (aqueous humor) that passes through the eye. This internal fluid is normally drained through a tissue called the trabecular meshwork at the angle at which the iris meets the cornea. If a large amount of water is produced or the drainage system is not functioning properly, the water cannot be drained at normal speed and the intraocular pressure will increase. Glaucoma tends to develop in the family. In some people, scientists have identified genes associated with high intraocular pressure and optic nerve damage.

Types of glaucoma

There are different types of glaucoma, including open-angle glaucoma and acute closed-angle glaucoma.

Open angle glaucoma: Open-angle glaucoma is the most common form of the disease. The drainage angle formed by the cornea and iris remains open, but the trabecular meshwork is partially blocked. This will gradually increase the intraocular pressure. This pressure damages the optic nerve. It happens so slowly that someone can lose track of it before they notice the problem.

Angle-closure glaucoma: Angle-closure glaucoma, is a type of glaucoma, that which occurs when the iris bulges forward and narrows or blocks the angle of drainage formed by the cornea and iris. As a result, the fluid cannot circulate in the eye and the pressure rises. Some people have a narrow drainage angle and are at increased risk of angle-closure glaucoma. Angle-closure glaucoma can appear suddenly (acute angle-closure glaucoma) or gradually (chronic angle-closure glaucoma). Acute angle-closure glaucoma is an emergency disease.

Normal tension glaucoma: In normal-tension glaucoma, the optic nerve is damaged even when the intraocular pressure is within the normal range. No one knows the exact reason for this. It is a condition having a sensitive optic nerve or has low blood flow in the optic nerve. This restricted blood flow can be caused by atherosclerosis (accumulation of fat deposits (plaques) in the arteries) or other conditions that affect blood flow.

Treatment

A study of Northwestern Medicine in mice identified new therapeutic targets for glaucoma, including the prevention of severe childhood glaucoma and the discovery of potential new classes of treatment for the most common forms of adult glaucoma. Research scientists have used gene editing to develop a new model of glaucoma in mice that resembles primary congenital glaucoma. Scientists were able to replace the function of genes that cause glaucoma when mutated by injecting a new long-term, non-toxic protein therapy (Hepta-ANGPT1) into mice. Using this injectable treatment, scientists have also succeeded in preventing the development of glaucoma in the model.

Prescription eye drops

Here, the prescription of eye drops includes:

Prostaglandins: These increase the outflow of fluid (aqueous humor) in your eyes, thereby lowering your intraocular pressure. Drugs in this category include Latanoprost (Xalatan), Travoprost (Travatan Z), Tafluprost (Zioptan) And Bimatoprost (Lumigan).

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Possible side effects include mild redness and burning sensation in the eyes, darkening of the iris, darkening of the skin on the eyelashes and eyelids and impaired vision. This class of medicine is prescribed for once-daily use.

Beta blocker: These reduce the production of fluid in your eyes, thereby lowering intraocular pressure (eye pressure). Examples are timolol (betimolol, istalol, timoptic, betaptic). Possible side effects include dyspnea, low heart rate, low blood pressure, impotence, and malaise. This class of medicine can be prescribed once or twice daily, depending on the condition.

Dry Eye Disease (DED), also called keratoconjunctivitis sicca, is defined as a multifactorial disease of the tears and ocular surface that results in symptoms of discomfort, visual disturbance, and tear film instability with potential damage to the ocular surface. Epidemiological studies in different parts of the world had reported in the range of 8% to 34%. In recent years, there has been an increasing research interest in DED, as it is one of the main reasons that people visit the clinic. It leads to a negative impact on patients' daily life and social functioning and making it an important public health problem. The United States

announced the economic burden of DED that the average cost of 11,302 USD per patient and 55.4 billion USD overall. The growth of DED is reflected in the emerging research in this field. In the last 10 years, the growth of DED literature averaged 12.18%. Qualitative and quantitative assessment of the published literature in a particular field is called bibliometric analysis. Bibliometric analysis has a range of applications and its impact continues within the scientific community. The citation analysis is the most common bibliometric analysis method which focuses on citation number. It has been widely used to quantify the relative importance of a scientific paper. A number of such studies have been published in different subspecialties of tuberculosis, diabetes, emergency medicine, and anesthesiology. Recently, similar methods have been applied to DED. These two studies had provided the evidence of publication trends and most important DED studies. However, the situation of different types was still unknown, especially for systematic reviews. Because systematic reviews are regarded as the strongest form of medical evidence, it is worthy to perform a bibliometric analysis of systematic reviews on DED research. Thus, we performed the current study.