

GLAUCOMA



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INTRODUCTION:

Glaucoma is a group of eye diseases that damage the optic nerve, which is responsible for transmitting visual information from the eye to the brain. This damage is often caused by increased pressure within the eye, known as intraocular pressure, although in some cases glaucoma can develop even with normal eye pressure.

Glaucoma VS Cataracts



TYPES OF GLAUCOMA:

- 1. Primary open-angle glaucoma:** This is the most common form of glaucoma, and it develops slowly over time. It is usually asymptomatic in its early stages and can cause gradual vision loss if left untreated.
- 2. Angle-closure glaucoma:** This type of glaucoma occurs when the angle between the iris and the cornea becomes blocked, leading to increased eye pressure. It can develop suddenly and is considered a medical emergency.

3. **Normal-tension glaucoma:** This type of glaucoma occurs when the optic nerve is damaged despite normal intraocular pressure. The cause of this type of glaucoma is not fully understood.
4. **Congenital glaucoma:** This type of glaucoma is present at birth and is caused by abnormalities in the eye's drainage system. It is rare but can cause severe vision loss if not treated early.
5. **Secondary glaucoma:** This type of glaucoma is caused by other medical conditions, such as diabetes or a previous eye injury. It can also be a side effect of certain medications.
6. **Pigmentary glaucoma:** This type of glaucoma occurs when pigment from the iris blocks the drainage channels in the eye, leading to increased intraocular pressure. It is more common in younger adults.

CAUSES/ETIOLOGY:

- The exact cause of glaucoma is not fully understood.
- The primary risk factor for glaucoma is increased intraocular pressure (IOP), which can occur due to a buildup of fluid in the eye or a blockage in the eye's drainage system. Age: The risk of developing glaucoma increases with age, especially after the age of 60.
- **Family history:** Individuals with a family history of glaucoma are at an increased risk of developing the condition.
- **Medical conditions:** Certain medical conditions, such as diabetes, high blood pressure, and heart disease, can increase the risk of developing glaucoma.
- **Eye injuries:** Previous eye injuries or surgeries can increase the risk of developing glaucoma.
- **Long-term use of corticosteroids:** Long-term use of corticosteroids, such as prednisone, can increase the risk of developing glaucoma.

PATHOGENESIS:

- The eye constantly produces a clear fluid called aqueous humor, which helps maintain the shape of the eye and provides nutrients to the surrounding tissues.
- This fluid normally drains out of the eye through a network of channels called the trabecular meshwork.
- However, in individuals with glaucoma, the trabecular meshwork becomes blocked, leading to a buildup of fluid in the eye and an increase in IOP.
- Over time, this increased pressure can cause damage to the optic nerve.
- Optic nerve is responsible for transmitting visual information from the eye to the brain.
- Increasing IOP leading to loss of peripheral vision and eventually total blindness if left untreated.
- This medical condition is termed as Glaucoma.

CLINICAL MANIFESTATION:

- Loss of peripheral vision: This is often the first symptom of glaucoma and can cause a "tunnel vision" effect where the individual's central vision remains intact while their peripheral vision is gradually lost.
- Blurred or hazy vision: As glaucoma progresses, it can cause the individual's vision to become blurry or hazy.
- Halos around lights: Some individuals with glaucoma may experience halos or colored rings around lights, especially at night.
- Eye pain: Although rare, some types of glaucoma can cause eye pain, headache, or facial pain.
- Nausea and vomiting: In severe cases, glaucoma can cause nausea and vomiting, which may be a sign of acute angle-closure glaucoma, a medical emergency.

CLINICAL EVALUATION/DIAGNOSIS:

- **Tonometry:** This test measures the pressure inside the eye, known as intraocular pressure (IOP). Elevated IOP is a primary risk factor for glaucoma, and this test helps detect abnormal IOP levels.
- **Visual field testing:** This test measures the extent and quality of the patient's peripheral vision. This is important because glaucoma can cause damage to peripheral vision before any other symptoms are noticeable.
- **Dilated eye exam:** In this test, eye drops are used to dilate (enlarge) the pupils so that the doctor can examine the optic nerve and the retina at the back of the eye for signs of damage.
- **Optical coherence tomography (OCT):** This test uses light waves to produce detailed images of the retina and optic nerve, allowing doctors to detect any structural damage that may indicate glaucoma.
- **Gonioscopy:** This test allows the doctor to examine the angle where the iris meets the cornea to determine if there is any blockage in the eye's drainage system.

PHARMACOLOGICAL MANAGEMENT:

- **Prostaglandin analogs:** These medications are the most commonly prescribed first-line treatment for glaucoma. They work by increasing the outflow of fluid from the eye, reducing intraocular pressure. Examples of prostaglandin analogs include latanoprost, bimatoprost, and travoprost.
- **Beta blockers:** These medications reduce intraocular pressure by decreasing the production of aqueous humor. They may be used in combination with prostaglandin analogs or other medications. Examples of beta blockers used to treat glaucoma include timolol and betaxolol.
- **Alpha agonists:** These medications reduce intraocular pressure by decreasing the production of aqueous humor and increasing the outflow of fluid from the eye. They may be used alone or in combination with other medications. Examples of alpha agonists used to treat glaucoma include brimonidine and apraclonidine.

- **Carbonic anhydrase inhibitors:** These medications reduce intraocular pressure by decreasing the production of aqueous humor. They may be used alone or in combination with other medications. Examples of carbonic anhydrase inhibitors used to treat glaucoma include dorzolamide and brinzolamide.
- **Rho kinase inhibitors:** These medications are a newer class of drugs that reduce intraocular pressure by increasing the outflow of fluid from the eye. Examples of Rho kinase inhibitors used to treat glaucoma include netarsudil.

NON PHARMACOLOGICAL MANAGEMENT:

- **Regular eye exams:** Early detection and treatment of glaucoma are crucial for preventing further damage to the optic nerve and preserving vision. Individuals should have a comprehensive eye exam at least once every two years, or as recommended by their eye doctor.
- **Maintain a healthy lifestyle:** Eating a healthy diet, getting regular exercise, and not smoking can help reduce the risk of developing certain types of glaucoma.
- **Manage other medical conditions:** Conditions such as high blood pressure, diabetes, and heart disease can increase the risk of developing glaucoma. Managing these conditions through regular check-ups, medication, and lifestyle changes can help reduce the risk.
- **Protect the eyes:** Wearing protective eyewear during activities that could cause eye injury and avoiding activities that could increase intraocular pressure, such as heavy lifting, can help reduce the risk of developing glaucoma.