

In the Name of God

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## **Glaucoma or Blue Water**

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### **Glaucoma or blue water:**

Glaucoma or blue water is characterized by elevated intraocular pressure (the pressure inside the eye) and decreased visual field. This disease is more prevalent among males than females. It is the second most prevalent cause of blindness in the world after cataract.

#### **Causes:**

In glaucoma, the pressure of the liquid inside the eye (aqueous humour) gets higher than normal the cause of which is the malfunctions in discharging this liquid through the tiny holes around the iris. In some cases, the holes are congenitally tight. In some others, the iris's moving forward or the obstruction of the holes by iris pigments or blood cells after bleeding inside the eye blocks the way of discharging the liquid from inside the eye. The high pressure inside the eye damages the optic nerves and decreases visual field. The level of damage depends on the intensity and duration of the high pressure inside the eye.

#### **Risk factors:**

An increase in intraocular pressure, aging, history of glaucoma in family, diabetes, lower corneal thickness, cardiovascular diseases, being black-skinned, migraine headaches, hypertension, use of drugs for cold, allergy medications, antihistamines, tranquilizers, corticosteroids, some drugs for stomach and bowel which increase the pressure of the liquid inside the eye, and using high-grade eyeglasses (for myopia or hyperopia).

#### **Important points:**

People beyond 40 years of age must be examined once in a few years by an ophthalmologist. In families in which one of the members including father, mother, brother, or sister is afflicted with glaucoma, the examinations must happen in relatively shorter intervals (for example annually) so that in case glaucoma starts to develop, detections be made on time for therapeutic interventions.

#### **Types of glaucoma:**

The normal angle of cornea and iris is 30-45 degrees. As people age, this angle gets smaller. Based on this angle, glaucoma is generally divided into two types of open-angle and closed-angle glaucoma.

More specifically, different types of glaucoma are as follows: Primary glaucoma, primary open-angle glaucoma, acute primary closed-angle glaucoma, subacute closed-angle glaucoma, chronic closed-angle glaucoma, congenital glaucoma, secondary glaucoma.

#### **Primary glaucoma:**

If there is no reason for the incidence of glaucoma, it would be called primary glaucoma.

#### **Primary open-angle glaucoma:**

This is the most prevalent type of glaucoma. It has genetic, familial, and racial roots. It usually appears after 50 years of age and remains without symptoms until its last stages. It can only be detected via medical examination. In this type of glaucoma, the visual field gradually decreases and at the final stages, the patient has a very limited visual field and can only see thing in front of him/her.

**Symptoms:** Loss of vision in small areas of the visual field, blurred vision in one side of the visual field, enlargement of the lost areas in the visual field usually in both sides of the eye, hardening of the eyeball, seeing halos around lights, emergence of blind spots in the visual field, inappropriate vision at night.

**Treatment:** Treatment can be done with the use of drugs based on doctor's orders. If drugs cannot control the pressure inside the eye, laser therapy or surgery will be required.

**Acute primary closed-angle glaucoma:**

This happens when the ridge of the iris creates obstruction in the anterior chamber angle of the eye. As a result, the discharge of the aqueous humor is reduced and the pressure inside the eye increases. People with hyperopia (due to already having small angles) as well as the old people (due to the enlargement of their lens) are more subject to this type of glaucoma.

**Symptoms:** The emergence of this type of glaucoma is aggressive and appears in one eye. Its attacks mainly happen during the afternoon when the pupil of the eye is dilated or after using pupil dilators in medical examinations. Symptoms include severely blurred vision, unbearable pain in the eye, redness of the eye, watery eyes, allergy to light, seeing halos around lights, nausea, and vomiting. In medical examinations, the pressure inside the eye increases, the pupil does not respond to light, the pupil is relatively dilated, and the cornea becomes shadowy.

**Treatment:** Treatment of acute primary closed-angle glaucoma is a medical emergency. The intraocular pressure must be lowered immediately. After that, the main treatment which is surgery must be conducted on the affected eye of the patient and the other eye must receive laser therapy to prevent the same type of glaucoma in the second eye. The intraocular pressure is lowered via the use of diuretic drugs (drugs that increase the production of urine).

**Subacute closed-angle glaucoma:**

This is another type of acute glaucoma; the only difference is that the attacks of high intraocular pressure long shorter in this type and has a recurrent mode. Attacks fade away by themselves. Sometimes they turn into acute glaucoma.

**Symptoms:** Short-term attacks and recurrent pain, redness, one-sided blurred vision, seeing halos around lights. Its treatment is similar to that of acute primary closed-angle glaucoma.

**Chronic closed-angle glaucoma:** Similar to chronic open-angle glaucoma, this type of glaucoma also appears with a significant decrease in the visual field. People suffering from this type of glaucoma never experience higher intraocular pressure. It is treated via surgery.

**Congenital glaucoma:**

This type of glaucoma emerges as the result of anomalies in the growth of eye structure. Its secondary version is accompanied by some congenital cerebral diseases (Sturge–Weber Syndrome, neurofibromatosis, and congenital rubella). This type of glaucoma is usually diagnosed until 1 year of age.

**Symptoms:** Watery eye is the first and the most common symptom. Allergy to light and lower cornea transparency are also observed. In medical examinations, an increase in intraocular pressure and a degree of enlargement in optic cup are observed. In patients affected with this type of glaucoma, cornea gets bigger and, as a result, the eye gets bigger, the condition which is referred to as buphthalmos. Globe rupture as the result of mild trauma and blindness are the consequences of this type of glaucoma. The treatment for this disease is surgery.

**Secondary glaucoma:**

The reason for the increase of intraocular pressure in this type of glaucoma is other eye diseases such as:

- Cataract
  
- Lens dislocation
  
- Retina inflammation (optic tumor)
  
- Use of corticosteroids (topical application of these drugs usually causes glaucoma)
  
- Traumas can also increase the intraocular pressure and lead to glaucoma

