



Glaucoma in Children

WHAT IS GLAUCOMA?

Glaucoma is a group of diseases where there is damage to the optic nerve in the eye when the pressure inside the eye is too high. This damage can lead to severe vision loss. Usually, the pressure is too high because the eye makes fluid but does not drain it well. Glaucoma is more common in older adults, but it can happen at any age. The signs and symptoms of glaucoma in infants and children differ from those in adults.

WHAT ARE THE TYPES AND CAUSES OF GLAUCOMA IN CHILDREN?

Glaucoma in children can be primary or secondary. Primary childhood glaucoma has no specific identifiable cause and is more common than other types. Secondary glaucoma is caused by or associated with other eye or systemic conditions.

There are different types of primary congenital glaucoma that occur at birth or in the first few years of life. Those types are neonatal, infantile, and late-onset. Neonatal glaucoma occurs at birth or during the first month of life. Infantile glaucoma occurs between months 1-24. Glaucoma with onset between 2-3 years is called late onset. Glaucoma after age 3 years is called juvenile glaucoma.

Glaucoma in children can also be associated with different conditions like Axenfeld-Reiger syndrome, [aniridia](#), [Sturge-Weber syndrome](#), [neurofibromatosis](#), chronic steroid use, trauma, or previous eye surgery such as

childhood [cataract](#) removal. Glaucoma, in these cases, is called secondary glaucoma. Not everyone with these conditions will get glaucoma, but those with these conditions should be monitored regularly.

HOW COMMON IS GLAUCOMA IN CHILDREN?

Glaucoma in children is relatively rare and varies depending on the region. Primary congenital glaucoma occurs in about 1 in 10,000 live births in Western countries. In the Middle East, glaucoma occurs in as high as 1 in 2,500 live births.

However, if a child has cataract surgery or one of the other conditions mentioned earlier, the risk of glaucoma is much higher. For example, up to 30% of children who had cataract surgery can develop glaucoma during the first five years after surgery.

IS GLAUCOMA IN CHILDREN HEREDITARY?

Some types of glaucoma in children can be inherited. About 10% of primary congenital cases are inherited, and specific gene mutations have been identified.

Other conditions that cause secondary glaucoma can also be inherited, but the incidence of glaucoma associated with these conditions is less predictable.

WHAT ARE THE SYMPTOMS OF PRIMARY CONGENITAL GLAUCOMA?

The most common symptoms of primary congenital glaucoma include large amounts of tearing, light sensitivity, and a large, cloudy cornea (the normally clear front surface of the eye, see Figure 1). Large amounts of tearing with eye discharge in a child are usually not caused by glaucoma but by a blocked tear duct. However, it is still recommended to consult an ophthalmologist if your child has these symptoms.

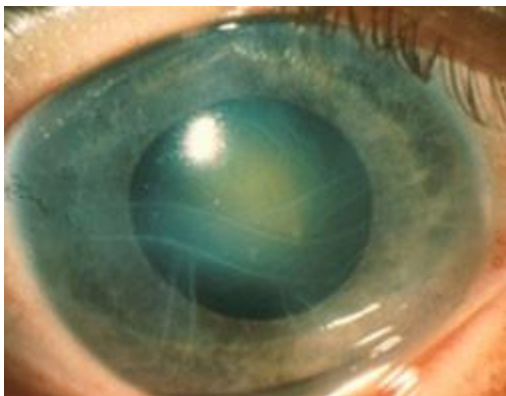




Figure 1: Multiple back surface corneal breaks (seen as curved lines, Haab striae) and a cloudy cornea in a child with congenital glaucoma.

WHAT ARE THE SYMPTOMS OF JUVENILE GLAUCOMA?

Juvenile glaucoma usually develops without any obvious symptoms, similar to adult glaucoma. A family history of glaucoma and high eye pressure is often found in those with juvenile glaucoma. There may also be signs of optic nerve damage on the eye exam.

HOW IS CHILDHOOD GLAUCOMA EVALUATED AND DIAGNOSED?

Different parts of the eye examination help the ophthalmologist determine the glaucoma type and how bad the glaucoma is. Depending on the age and cooperation of the child, some or all of the eye exams may give better information if the exam is done while the child is under anesthesia. Specifically, the ophthalmologist will check eye pressure, cornea size, cornea clarity, cornea thickness, the fluid drainage area of the eye, eye length, [refractive error](#) (need for glasses to focus), and optic nerve health. Older children may also be able to have their peripheral vision tested for signs of optic nerve damage. Other tests, such as Optical Coherence Tomography (OCT), can help detect subtle signs of glaucoma.

HOW IS CHILDHOOD GLAUCOMA TREATED?

Childhood glaucoma is treated by lowering the eye pressure with medicine (eye drops or medications by mouth) and/or eye surgery.

Surgery is the most common treatment for primary congenital glaucoma. Trabeculotomy and goniotomy are the most common surgeries to open the eye drainage system and help the eye fluid drain better in primary congenital glaucoma.

There are other surgeries that create a bypass route for the fluid made by the eye to help it drain better. A trabeculectomy creates an opening in the front of the eye that is then covered by the conjunctiva (the film that covers the white part of the eye) to help fluid made by the eye to drain out. A tube shunt is a small device that is placed inside the eye to help fluid drain out. Laser procedures can also be helpful in some cases of glaucoma.



Treatment of glaucoma can require multiple procedures and examinations under anesthesia to help protect vision. Even after surgery, medications may be necessary to control eye pressure.

Eye drops and medications by mouth are often the primary treatments for juvenile and secondary glaucoma.

Successful treatment of high eye pressure is not the only factor in helping children with glaucoma develop good vision. Many children with glaucoma develop other eye problems like [myopia](#) (nearsightedness), [amblyopia](#) (“lazy eye”), and [strabismus](#) (eye movement problem). These eye problems may require treatment with eye patching, glasses, or other eye surgeries.

Despite timely and aggressive treatment, childhood glaucoma can cause significant vision loss. Therefore, early diagnosis and treatment, as well as close monitoring, are crucial for a successful visual outcome.

WHERE CAN I FIND MORE INFORMATION ABOUT GLAUCOMA IN CHILDREN?

For more information about glaucoma in children, please check out these online resources:

[Pediatric Glaucoma and Cataract Family Association \(PGCFA\)](#)

[Midwest Center for Childhood Glaucoma and Cataracts \(MCCGC\)](#)

More technical information may be found on the [EyeWiki Site](#).

- https://eyewiki.org/Childhood_Glaucoma_Research_Network_Classification_and_Epidemiology_of_Childhood_Glaucoma
- https://eyewiki.org/Primary_Congenital_Glaucoma
- https://eyewiki.org/Pediatric_Glaucoma_Following_Cataract_Surgery

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