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ASSIGNMENT TITLE: Write short notes on any two eye defects

GLAUCOMA

Glaucoma is a group of diseases characterized by increased intraocular pressure, which causes damage of optic nerve, resulting in blindness.

In glaucoma, the drainage of aqueous humor through trabeculae is blocked, resulting in increased intraocular pressure. When the intraocular rises above 60 mm Hg, the optic nerve fibers at the optic disk are compressed. Initially it decreases the visual field (loss of peripheral vision), which eventually leads to total blindness.

However, with early treatment, often the eyes may be protected against serious vision loss. Untreated glaucoma leads to permanent damage of the optic nerve and results in blindness. In old age, glaucoma occurs due to the obstruction of trabeculae by fibrous structures.

Types of Glaucoma

Elevation of intraocular pressure causing glaucoma can occur at any stage of life. Congenital glaucoma develops in babies born with increased intraocular pressure.

Glaucoma in infants is called **infantile glaucoma**. When it occurs in childhood, it is known as **juvenile glaucoma**.

Generally glaucoma is divided into two types:

1. Primary open-angle glaucoma
 2. Primary angle-closure glaucoma.
1. *Primary open-angle glaucoma (POAG)*

POAG is the most common type of glaucoma and it accounts for about 80% of all cases of glaucoma. The term open-angle refers to drainage system, which is responsible for draining the aqueous humor from the eye. Actually, in POAG there is no visible obstruction in the drainage system. Still intraocular pressure increases, causing damage to optic nerve. Exact cause of POAG is not known yet. It is suggested that a microscopic (minute) blockage in drainage system beyond limbus may obstruct the flow of aqueous humor.

It causes a gradual increase in intraocular pressure.

2. Primary angle-closure glaucoma (PACG)

PACG is characterized by visible obstruction of drainage system for aqueous humor. Iris is pushed against cornea, preventing the drainage of aqueous humor.

Intraocular pressure rises over the period of few hours.

Causes of Glaucoma

Major cause of glaucoma is the blockage in drainage system of aqueous humor in trabeculae, resulting in increased intraocular pressure. Glaucoma also develops secondary to other disorders, which affect the eyes. Common causes of secondary glaucoma are diabetes, inflammation or injury to eye and excess use of drugs such as corticosteroid.

Symptoms of Glaucoma

Primary open-angle glaucoma is a **silent chronic disease** without any early symptoms. Symptoms that develop in later stages include heaviness around eyeball, headache and rapid reduction in visual acuity and visual field.

Early symptoms of angle-closure glaucoma are severe pain in eye or eyebrow, headache, nausea, blurred vision and rainbow halo (colored rings) around bulb light. Immediate care should be taken if two or more of these symptoms appear together.

Treatment for Glaucoma

Treatment does not cure the disease but can prevent further damage of optic nerve. Treatment is aimed at lowering the intraocular pressure. It is achieved by using eye drops or medicines alone or in combination with laser treatment. If intraocular pressure cannot be controlled by these methods, surgery is required.

CATARACT

Cataract is the **opacity** or cloudiness in the natural lens of the eye. It is the major cause of blindness worldwide. When lens becomes cloudy, light rays cannot pass through it easily and vision is blurred. Cataract develops in old age after 55 to 60 years.

Lens is situated within the sealed capsule. Old cells die and accumulate within the capsule. Over years, the accumulation of cells is associated with accumulation of fluid and denaturation of proteins in lens fibers, causing cloudiness of lens and blurred image.

Causes of Cataract

In addition to age, cataract develops due to many other causes such as:

1. Eye injuries
2. Previous eye surgery
3. Diseases such as diabetes, Wilson disease and hypocalcemia
4. Long-term use of drugs such as steroids, diuretics and tranquilizers
5. Long-term unprotected exposure to sunlight
6. Alcoholism
7. Family history
8. Diet containing large quantity of salt .pressure

Symptoms of Cataract

Common symptoms of cataract:

1. Glare
2. Painless blurred vision
3. Poor night vision
4. Diplopia in affected eye
5. Need for a bright light while reading
6. Fading of colors.

Treatment for Cataract

Surgery is the only treatment for cataract. During surgery, cloudy lens is removed from the eye through a surgical incision. The natural lens is replaced with a permanent, clear and plastic **intraocular lens** (IOL) implant. Different procedures are followed to remove the cloudy lens.

Common methods are:

1. *Extracapsular extraction*

Extracapsular extraction is rather an old technique. A 12 mm incision is made in the eye under an operating microscope, to remove the lens as a whole. Posterior capsule of lens is left in place to hold the IOL implant. Multiple sutures are required to seal the eye after surgery. Sutures must be perfect; otherwise astigmatism may develop.

2. Phacoemulsification

Phacoemulsification (Phaco) is the current technique. **Phaco** is the procedure in which cataract is broken into smaller fragments by **ultrasonic vibrations**. It is done through a small (3 mm) incision. An ultrasound (or laser) probe is used to break the lens material without damaging the capsule. Lens fragments are aspirated out of the eye. A foldable IOL is then introduced through the incision. After entering the eye, the lens unfolds to take position inside the capsule. No sutures are needed, as the incision is self-sealing.