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Question: write short notes on any two eye defects

1. Astigmatism

Astigmatism is a common vision problem caused by an error in the shape of the cornea. With astigmatism, the lens of the eye or the cornea, which is the front surface of the eye, has an irregular curve. This can change the way light passes, or refracts, to your retina. This causes blurry, fuzzy, or distorted vision. Farsightedness and nearsightedness are two other types of problems with the way light passes to your retina. Farsightedness is called hyperopia. Nearsightedness is called myopia.

Types of astigmatism

The two main types of astigmatism are corneal and lenticular. A corneal astigmatism happens when your cornea is misshapen. A lenticular astigmatism happens when your lens is misshapen. Astigmatism can occur in children and adults. The risk of developing astigmatism may be higher if you have any of the following:

- a family history of astigmatism or other eye disorders, such as keratoconus (degeneration of the cornea)
- scarring or thinning of your cornea
- excessive nearsightedness, which creates blurry vision at a distance
- excessive farsightedness, which creates blurry close-up vision
- a history of certain types of eye surgery, such as cataract surgery (surgical removal of a clouded lens)

Symptoms of astigmatism

The symptoms of astigmatism may differ in each person. Some people don't have any symptoms at all. The symptoms of astigmatism include:

- blurry, distorted, or fuzzy vision at all distances (up close and far away)
- difficulty seeing at night
- eyestrain
- squinting
- eye irritation
- headaches

Treatment for astigmatism

Mild cases of astigmatism may not require treatment. The following method can be used to treat astigmatism

Corrective lenses

Corrective eyeglasses and contact lenses prescribed by a doctor are the most common and least invasive treatments for astigmatism.

Orthokeratology (Ortho-K)

Orthokeratology (Ortho-K) is a treatment that uses rigid contact lenses to temporarily correct the irregular curvature of your cornea. You'll wear rigid contact lenses for limited periods of time. You may wear them during sleep and then remove them during the day. Some people have clear vision during the day without corrective lenses when undergoing Ortho-K. The benefits of Ortho-K are only present when using it. Your vision will return to its previous state after stopping Ortho-K.

Surgery

The doctor may recommend refractive surgery if you have a severe case. This type of surgery involves using lasers or small knives to reshape your cornea. This will permanently correct your astigmatism. The three common surgeries for astigmatism

are laser in situ keratomileusis (LASIK), photorefractive keratectomy (PRK), and radial keratotomy (RK). All surgeries carry some risks.

2. Presbyopia

Presbyopia is an eye condition in which your eye slowly loses the ability to focus quickly on objects that are close. It's a disorder that affects everyone during the natural aging process. When light enters your eye, it passes through your cornea. Then, it passes through your pupil. Your iris is the colored ring in your eye that opens and closes your pupil to adjust the amount of light passing through it. After passing through your pupil, the light passes through your lens. In its healthiest state, your lens changes shape so it can bend the light rays further and focus them on your retina at the back of your eye. However, your lens becomes less flexible with age. Then, it can't change shape as easily. As a result, it's unable to bend the light properly to focus it on your retina.

Causes of presbyopia

When you're young, the lens in your eye is flexible and relatively elastic. It can change its length or shape with the help of a ring of tiny muscles that surround it. The muscles that surround your eye can easily reshape and adjust your lens to accommodate both close and distant images.

With age, your lens and the muscle fibers surrounding your lens slowly lose flexibility and stiffen. As a result, your lens becomes unable to change shape and constricts to focus on close images. With this hardening of your lens, your eye gradually loses its ability to focus light directly onto your retina.

Risk Factors for Presbyopia

The most significant risk factor for presbyopia is age. Most people lose some ability to focus on close objects by age 40. It affects everyone, but some people notice it more than others.

Certain diseases or drugs can cause presbyopia in people younger than age 40. When the symptoms of presbyopia occur earlier than usual, it's called premature presbyopia. If you notice the symptoms of presbyopia at an age earlier than normal onset, it may be a

sign of an underlying medical condition.

Higher risk of premature presbyopia are:

- anemia, which is a lack of enough normal blood cells
- cardiovascular disease
- diabetes, or difficulties metabolizing blood sugar
- hyperopia, or farsightedness, which means you have a greater difficulty seeing objects nearby than objects that are far away
- multiple sclerosis, which is an autoimmune disease that affects your spine and brain
- myasthenia gravis, which is a neuromuscular disorder that affects your nerves and muscles eye trauma or disease
- vascular insufficiency, or poor blood flow

Treatment is typically with eyeglasses. The eyeglasses used have higher focusing power in the lower portion of the lens. Off the shelf reading glasses may be sufficient for some. Contact lenses may also occasionally be used.

Myopia (Short Sightedness)

In this case, the person cannot see the distant object. Image is formed before the retina. Concave lens is used for correcting myopia.

3. Myopia or Nearsightedness

Causes of Myopia

- Elongation of eye ball along the axis.
- Shortening of focal length of eye lens.
- Over stretching of ciliary muscles beyond the elastic limit.

Remedy of Myopia

- Concave (Diverging) lens is used.

4. Hyperopia or Hypermetropia or Long-sightedness

In this case, the person cannot see near object. Image is formed behind the retina.

Convex lens is used for correcting Hypermetropia.

Causes of Hyperopia

- Shortening of eye ball along the axis.
- Increase in the focal length of eye lens.
- Stiffening of ciliary muscles.

Remedy of Hypermetropia

A Convex (Converging) lens is used.

4. Glaucoma

Glaucoma is a condition that damages your eye's optic nerve. It gets worse over time. It's often linked to a buildup of pressure inside your eye. Glaucoma tends to run in families. You usually don't get it until later in life.

The increased pressure in your eye, called intraocular pressure, can damage your optic nerve, which sends images to your brain. If the damage worsens, glaucoma can cause permanent vision loss or even total blindness within a few years.

Most people with glaucoma have no early symptoms or pain. If someone loses vision, it can't be brought back. But lowering eye pressure can help you keep the sight you have. Most people with glaucoma who follow their treatment plan and have regular eye exams are able to keep their vision.

The eyes generate a clear fluid (aqueous humor) which fills the space between the cornea and the iris. This generated fluid filter out through a complex drainage system. This is the balance between the production and drainage of this liquid that determines the eyes intraocular pressure (IOP). Glaucoma is a disease which is caused by increased IOP usually resulting from a malfunction in the eye's drainage system. Increased IOP can

also cause irreversible damage to the optic nerves and retinal fibers and if left untreated can result in a permanent loss of vision.

Glaucoma Risk Factors

It mostly affects adults over 40, but young adults, children, and even infants can have it. African Americans tend to get it more often, when they're younger, and with more vision loss.

Someone is more likely to get it if you:

- Are of African American, Irish, Russian, Japanese, Hispanic, Inuit, or Scandinavian descent
- Are over 40
- Have a family history of glaucoma
- Have poor vision
- Have diabetes
- Take certain steroid medications such as prednisone
- Have had an injury to your eye or eyes
- Have corneas that are thinner than usual
- Have high blood pressure, heart disease, diabetes, or sickle cell anemia
- Have high eye pressure
- Are nearsighted or farsighted