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18/ENG08/020

BIOMEDICAL ENGINEERING

ASSIGNMENT

QUESTION

WRITE SHORT NOTES ON ANY TWO EYE DEFECTS

ANSWER

1. MYOPIA

Myopia is a common vision condition in which you can see objects near to you clearly, but objects farther away are blurry. It occurs when the shape of your eye causes light rays to bend incorrectly, focusing images in front of your retina instead of on your retina. Myopia may develop gradually or rapidly, often worsening during childhood and adolescence.

Symptoms

Myopia symptoms may include:

- Blurry vision when looking at distant objects
- The need to squint or partially close the eyelids to see clearly
- Headaches caused by eyestrain
- Difficulty seeing while driving a vehicle, especially at night

Myopia is often first detected during childhood and is commonly diagnosed between the early school years through the teens. A child with nearsightedness may:

- Persistently squint
- Need to sit closer to the television, movie screen or the front of the classroom
- Seem to be unaware of distant objects

- Blink excessively
- Rub his or her eyes frequently

Causes

The eye has two parts that focus images:

- **The cornea** is the clear, dome-shaped front surface of your eye.
- **The lens** is a clear structure.

In a normally shaped eye, each of these focusing elements has a perfectly smooth curvature. A cornea and lens with such curvature bend (refract) all incoming light to make a sharply focused image directly on the retina, at the back of the eye. If the cornea or lens isn't evenly and smoothly curved, light rays aren't refracted properly, and you have a refractive error. Myopia usually occurs when the eyeball is longer than normal or the cornea is curved too steeply. Instead of being focused precisely on your retina, light is focused in front of the retina, resulting in a blurry appearance for distant objects.

Complications

Myopia is associated with a variety of complications from mild to severe, such as:

- **Reduced quality of life:** Uncorrected myopia can affect the quality of life. One might not be able to perform a task as well as he/she wish and the limited vision may detract from the enjoyment of day-to-day activities.
- **Eyestrain:** Uncorrected myopia may cause one to squint or strain the eyes to maintain focus. This can lead to eyestrain and headaches.
- **Other eye problems.** Severe myopia puts one at an increased risk of retinal detachment, glaucoma, cataracts and myopic maculopathy damage in the central retinal area. The tissues in long eyeballs are stretched and thinned, causing tears, inflammation, new blood vessels that are weak and bleed easily, and scarring.

2. 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.

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.

Causes

It's not known what causes astigmatism, but genetics is a big factor. It's often present at birth, but it may develop later in life. It may also occur as a result of an injury to the eye or after eye surgery. Astigmatism often occurs with nearsightedness or farsightedness.

Symptoms

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

How to treat astigmatism

Mild cases of astigmatism may not require treatment but the following methods can be used:

- Corrective lenses
- Orthokeratology (Ortho-K): Orthokeratology (Ortho-K) is a treatment that uses rigid contact lenses to temporarily correct the irregular curvature of your cornea.
- Surgery: This type of surgery involves using lasers or small knives to reshape your cornea. This will permanently correct your astigmatism.

References

www.healthline.com

www.mayoclinic.com