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NURSING

200 LEVEL

PHYSIOLOGY

Write short notes on any two eye defects.

The Human eye works on the refraction of light through a natural convex lens made up of transparent living material and enables us to see things around us. And the ability to see is called vision, eyesight or drishti. Human eye consists of cornea, iris, pupil, ciliary muscles, eye lens, retina and optical nerve.

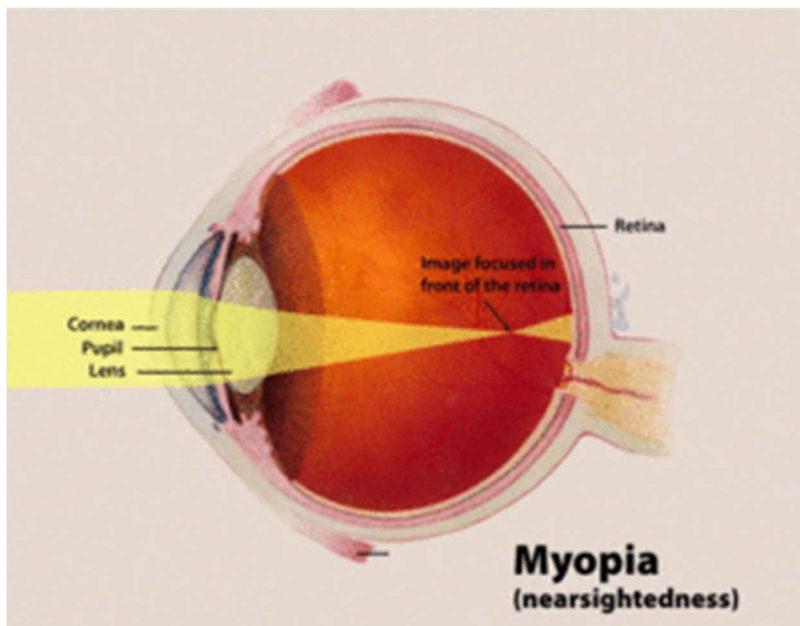
Myopia or Near-Sightedness

Myopia is a defect of vision wherein far-off objects appear blurred and objects near are seen clearly. Since the eyeball is too long or the eye lens's refractive power is too high; the image forms in front of the retina rather

than forming on it. Nearsightedness (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 (refract) incorrectly, focusing images in front of your retina instead of on your retina.

Nearsightedness may develop gradually or rapidly, often worsening during childhood and adolescence. Nearsightedness tends to run in families.

A basic eye exam can confirm nearsightedness. You can compensate for the blur with eyeglasses, contact lenses or refractive surgery.



Symptoms

Nearsightedness 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 (night myopia)

Nearsightedness 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

Your 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 about the size and shape of an M&M's candy.

In a normally shaped eye, each of these focusing elements has a perfectly smooth curvature, like the surface of a marble. 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 your eye.

A refractive error

If your cornea or lens isn't evenly and smoothly curved, light rays aren't refracted properly, and you have a refractive error.

Nearsightedness usually occurs when your eyeball is longer than normal or your cornea is curved too steeply. Instead of being focused precisely on your retina, light is focused in front of your retina, resulting in a blurry appearance for distant objects.

Other refractive errors

In addition to nearsightedness, other refractive errors include:

- **Farsightedness (hyperopia).** This occurs when your eyeball is shorter than normal or your cornea is curved too little. The effect is the opposite of nearsightedness. In adults, both near and distant objects are blurred.
- **Astigmatism.** This occurs when your cornea or lens is curved more steeply in one direction than in another. Uncorrected astigmatism blurs your vision.

Risk factors

Certain risk factors may increase the likelihood of developing nearsightedness, such as:

- **Genetics.** Nearsightedness tends to run in families. If one of your parents is nearsighted, your risk of developing the condition is increased. The risk is even higher if both parents are nearsighted.

- **Environmental conditions.** Some studies support the idea that a lack of time spent outdoors may increase the chances of developing myopia.

Complications

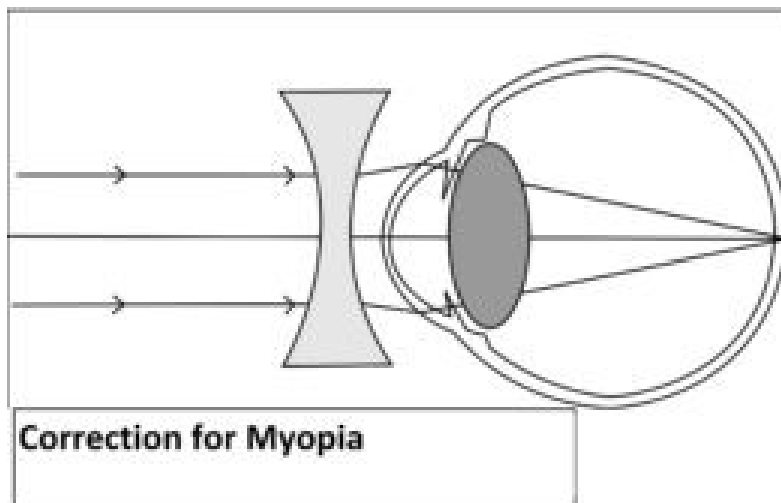
Nearsightedness is associated with a variety of complications from mild to severe, such as:

- **Reduced quality of life.** Uncorrected nearsightedness can affect your quality of life. You might not be able to perform a task as well as you wish. And your limited vision may detract from your enjoyment of day-to-day activities.
- **Eyestrain.** Uncorrected nearsightedness may cause you to squint or strain your eyes to maintain focus. This can lead to eyestrain and headaches.
- **Impaired safety.** Your own safety and that of others may be jeopardized if you have an uncorrected vision problem. This could be especially serious if you are driving a car or operating heavy equipment.
- **Financial burden.** The cost of corrective lenses, eye exams and medical treatments can add up, especially with a chronic condition such as nearsightedness. Vision reduction and vision loss also can affect income potential in some cases.
- **Other eye problems.** Severe nearsightedness puts you 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.

Correction of myopia

It can happen by wearing glasses/contacts made of concave lenses to help focus the image on the retina. Contact lenses for nearsightedness are the corrective choice for many. There are lens options to correct both nearsighted and farsighted vision. If you maintain an active lifestyle, such as participating in sports, or you simply prefer contacts over glasses, talk to your eye doctor about your contact lens options.

Corrective surgery for myopia may also be an option. With LASIK surgery for nearsightedness, a laser reshapes your cornea so that light entering your eyes focuses as it should. Not everyone automatically qualifies for this option. It depends upon your eyes. You should also be aware that many insurance companies do not cover the procedure, considering it cosmetic.



b. Hypermetropia or Longsightedness

Hypermetropia is a defect of vision wherein there is difficulty in viewing objects that are near but one can view far objects easily. Since the eyeball is too short or eye lens's refractive power is too weak hence the image instead of being forming upon the retina, its forms behind the retina. The medical name for long-sight is hypermetropia, sometimes called hyperopia. Eyesight problems, such as hypermetropia, are also known as refractive errors. Long sight leads to problems with near vision and the eyes may commonly become tired. Distance vision (long sight) is, in the beginning, good. Long sight can be corrected by glasses or contact lenses, or sometimes 'cured' with laser eye surgery.

Causes

The causes of long sight are usually hereditary (genetic). Long sight can occur at any age but it tends to become more noticeable above the age of 40 years.

In rare cases, long sight is caused by other conditions such as diabetes, small eye syndrome (microphthalmia), cancers around the eye and problems with the blood vessels in the retina.

Many babies and very young children tend to be slightly long-sighted but usually grow out of this by about 3 years of age.

A particular type of age-related long sight (presbyopia) occurs because the lens of the eye becomes more stiff with age.

Symptoms

The main symptom is a difficulty with near vision. 'Tiring' of the eyes (asthenopia) is common and long-sighted people may have headaches and uncomfortable vision.

There may be difficulties with seeing with both eyes (binocular vision), as the brain will tend to ignore signals coming from the most long-sighted eye. Lazy eye (amblyopia) or squint (strabismus) can therefore also occur in long sight.

Long-sighted people may have difficulty with depth perception (3-dimensional vision), as this needs two eyes to work together, more or less equally.

Complications

If severe long sight (hypermetropia) is present from a very young age, lazy eye (amblyopia) can result. The eye with less good vision does not learn to see properly because the brain ignores its signals and concentrates only on the better eye. Visual development in the brain occurs in the first few years of life and if this problem is not spotted until after vision has finished developing, the poorer eye will not fully develop its 'information route' into the brain, so will never see as well

Treatment

Glasses

The simplest, cheapest and safest way to correct long sight is with glasses. Convex prescription lenses (called plus lenses) are used to bend light rays slightly inwards to give a little bit of additional focusing power to the eye. The light rays then have a lesser angle to bend travelling through the cornea and lens and the lens has less work to do. As a result, the light rays are able to focus on the retina. There is an enormous choice of spectacle frames available, to suit all budgets; younger people may even regard them as a fashion accessory.

Contact lenses

These do the same job as glasses but they sit right on the surface of the eye. Many different types of contact lenses are available. Lenses may be soft or rigid gas-permeable. They can be daily disposable, extended wear,

monthly disposable, or non-disposable. Your optician can advise which type is most suitable for your eyes and your prescription.

Contact lenses tend to be more expensive than glasses. They require more care and meticulous hygiene. They are more suitable for older teenagers and adults, rather than very young children.

Surgery

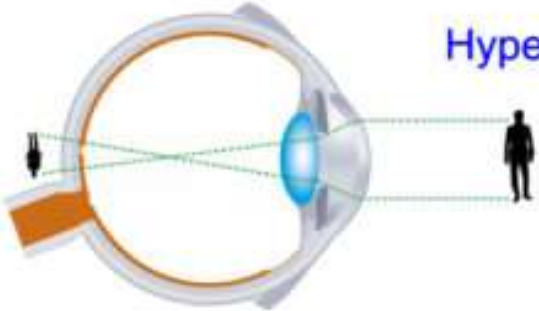
Laser eye surgery is an option for some people with long sight. Generally, this type of surgery is not available on the NHS. Laser eye surgery is expensive but offers the chance to restore normal sight permanently. The procedure is generally painless.

Complete and permanent resolution of the refractive error is possible in a number of people. Others have a significant improvement even though perfect vision is not achieved and glasses or contact lenses may still be needed.

A small number of people develop complications. Some develop hazy vision, a problem with night vision, or problems with bright light haloes in their peripheral (edge) vision.

Many private companies advertise laser eye surgery. Before embarking upon this type of treatment you should do some research. You only have one pair of eyes and you need to find the best treatment for you. This may not be the cheapest. Try to go with personal recommendations, preferably a recommendation by an NHS eye surgeon (ophthalmologist). It is important that you know your facts - the failure rate, the risk of complications, level of aftercare and what the procedure involves, before submitting yourself to an irreversible, costly treatment.

Hyperopia



Corrected

