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Eye defects

1.Presbyopia

Presbyopia is the gradual loss of your eyes' ability to focus on nearby objects. It's a natural, often annoying part of aging. Presbyopia usually becomes noticeable in your early to mid-40s and continues to worsen until around age 65. One may become aware of presbyopia when you start holding books and newspapers at arm's length to be able to read them. A basic eye exam can confirm presbyopia. The condition can be corrected with eyeglasses or contact lenses. Surgery is also an option. It is very common with more than 1.5 million cases per year (Nigeria). Treatment can help, but this condition can't be cured. It is usually self-diagnosable. Lab tests or imaging are not required. It is also chronic and can last for years or be lifelong.

Causes.

To form an image, your eye relies on the cornea and the lens to focus the light reflected from objects. The closer the object, the more the lens flexes. The cornea is the clear, dome-shaped front surface of your eye while the lens is a clear structure about the size and shape of an M&M's candy. Both of these structures bend (refract) light entering your eye to focus the image on the retina, located on the inside back wall of your eye.

The lens, unlike the cornea, is somewhat flexible and can change shape with the help of a circular muscle that surrounds it. When you look at something at a distance, the circular muscle relaxes. When you look at something nearby, the muscle constricts, allowing the relatively elastic lens to curve and change its focusing power.

Presbyopia is caused by a hardening of the lens of your eye, which occurs with aging. As your lens becomes less flexible, it can no longer change shape to focus on close-up images. As a result, these images appear out of focus.

Risk factors.

Certain factors can make you more likely to develop presbyopia, including:

- ❖ Age; Age is the greatest risk factor for presbyopia. Almost everyone experiences some degree of presbyopia after age 40.
- ❖ Other medical conditions. Being farsighted or having certain diseases — such as diabetes, multiple sclerosis or cardiovascular diseases — can increase your risk of premature presbyopia, which is presbyopia in people younger than 40.
- ❖ Drugs. Certain drugs are associated with premature presbyopic symptoms, including antidepressants, antihistamines and diuretics.

2. Color blindness.

Color blindness, also known as color vision deficiency, is the decreased ability to see color or differences in color. Simple tasks such as selecting ripe fruit, choosing clothing, and reading traffic lights can be more challenging. Color blindness may also make some educational activities more difficult. However, problems are generally minor, and most people find that they can adapt. People with total color blindness (achromatopsia) may also have decreased visual acuity and be uncomfortable in bright environments. The most common cause of color blindness is an inherited problem in the development of one or more of the three sets of color-sensing cones in the eye. Males are more likely to be color blind than females, as the genes responsible for the most common forms of color blindness are on the X chromosome. As females have two X chromosomes, a defect in one is typically compensated for by the other, therefore females can be carriers. Males only have one X chromosome and therefore express the genetic disorder. Color blindness can also result from physical or chemical damage to the eye, optic nerve or parts of the brain. Diagnosis is typically with the Ishihara color test; however, a number of other testing methods, including genetic testing, also exist.

Causes.

Color vision deficiencies can be classified as acquired or inherited.

- ✓ Acquired: Diseases, drugs (e.g., hydroxychloroquine), and chemicals such as styrene or organic solvents may cause color blindness.
- ✓ Inherited: There are three types of inherited or congenital color vision deficiencies: monochromacy, dichromacy, and anomalous trichromacy
 - Monochromacy, also known as "total color blindness", is the lack of ability to distinguish colors (and thus the person views everything as if it were on a

black and white television); caused by cone defect or absence. Monochromacy occurs when two or all three of the cone pigments are missing and color and lightness vision is reduced to one dimension.

- Dichromacy is hereditary. Protanopia and deuteranopia are hereditary and sex-linked, affecting predominantly males.
- Anomalous trichromacy is a common type of inherited color vision deficiency, occurring when one of the three cone pigments is altered in its spectral sensitivity.

Other causes of color blindness include brain or retinal damage caused by accidents and other traumas which produce swelling of the brain in the occipital lobe, and damage to the retina caused by exposure to ultraviolet light (wavelengths 10 to 300 nm). Damage often presents itself later in life.

Color blindness may also present itself in the range of degenerative diseases of the eye, such as age-related macular degeneration, and as part of the retinal damage caused by diabetes. Vitamin A deficiency may also cause color blindness.

Some subtle forms of color blindness may be associated with chronic solvent-induced encephalopathy (CSE), caused by long-time exposure to solvent vapors.

Management.

There is no cure for color deficiencies. "The American Optometric Association reports a contact lens on one eye can increase the ability to differentiate between colors, though nothing can make you truly see the deficient color."

Lenses Edit

Optometrists can supply colored spectacle lenses or a single red-tint contact lens to wear on the non-dominant eye, but although this may improve discrimination of some colors, it can make other colors more difficult to distinguish. A 1981 review of various studies to evaluate the effect of the X-chrom contact lens concluded that, while the lens may allow the wearer to achieve a better score on certain color vision tests, it did not correct color vision in the natural environment. A case history using the X-Chrom lens for a rod monochromat is reported and an X-Chrom manual is online.