Major Eye Diseases and Disorders

Achromatopsia

Complete absence of color perception due to the absence of cones.
Rare congenital genetic disorder.
Visual acuity is affected (no more than 20/200).
Extreme light sensitivity.
Nystagmus is common.
Vision is stable.

Treatment

Increase contrast and visual acuity, and reduce light sensitivity by using orange or red filters.

Color vision defect

Usually mid and inherited (10% of male and 0.5% of female).
Can be non-inherited if visual pathway gets damaged (acquired).

Treatment

Increase contrast and reduce light sensitivity by using tinted lenses.

Albinism

Inherited disorder of pigment development (melanin reduced or absent).
In the eyes, pigment is required for the development of the retina (fovea).
Vision acuity defect depends on the type of albinism.
Reduced visual acuity caused by under developed fovea.
Hyperopia, astigmatism and strabismus.
Light sensitivity.
No depth perception.
Contrast, color and visual field are untouched.

Treatment

Filters and tinted lenses improve light sensitivity and vision outdoor.
In classroom avoid white board, white paper and being next to a window.
Overhead lighting can increase comfort and reduce fatigue from glare.

Amblyopia

Reduced visual acuity due to poor information going to the brain.
Poor visual input to the brain limits the development of visual areas of the brain.
Childhood disease (between birth and 8 years old)
First cause of monocular vision loss. Both eyes vision loss less common.

Treatment

Restoring clear vision with glasses, surgery, or by patching the better eye.
Earlier treated gets better results and recovery.

Aniridia

Absence of iris.
Under development of the retina (foveal hypoplasia).
Fovea and optic nerve are under developed.
Reduced visual acuity.
Nystagmus.
Light sensitivity.

Treatment

Light and glare control improve vision and comfort.

Anterior segment dysgenesis

Axenfeld-Rieger syndrome
Autosomal-dominant syndrome.
Affects cornea and iris.
Iris is irregular, has holes, off-centred pupil.
Affects children.

Cataracts

Opacity or clouding of the less.

Childhood cataracts

Congenital, inherited.
If not treated can cause amblyopia and nystagmus.
Reduced vision, contrast sensitivity and glare.
Associated with galactosemia (inherited disease of sugar), rubble, trauma, aniridia.

Treatment

Surgery for removing the lens.

Adult cataracts

50% of adults over 75 years old.
Ty[es: cortical, nuclear sclerosis and posterior subcapsular.
Reduced visual acuity.
Contrast sensitivity.
Increase glare sensitivity.

Treatment

Surgery.

Cerebral palsy

None progressive condition.
Damage to the brain around birth.
Neural system for movement and posture.
Associated with developmental delay and seizure.
Damage of optic nerve and visual cortex from inadequate oxygen supply.
Associated vision are optic atrophy, retinopathy of prematurity and CVI.
Uncontrolled eye movement (diskenitic eye disorder).
Difficulty or inability to track movements.
Difficulty to read, write, speak, mobility and learning.

Coloboma

Congenital malformation of the eyes, structure of the eye.
Result of eye development early in gestation.
Structure fails to close.
Vision disorder depends on which structure of the eye is affected.

Congenital infections

Infections in early pregnancy cause the most serious problems.
Can cause macular scaring (reduce central acuity), small eye (microphtalopia), cataract.
As well as brain damage.

Congenital stationary night blindness

Reduced vision under light.
Decreased from infancy.

Reduced central acuity.
Myopia.
Peripheral vision not affected.

Treatment

Magnification, flashlight.

Corneal opacity and scars

Reduce visual acuity.
Sensitivity to light and glare.
Contrast sensitivity.
Caused by bacterial infections.

Treatment

Corneal transplant.
Use of low vision devices.
Control of glare.
Augmented contrast.

Corneal dystrophy

Progressive disease.
Inherited clouding of the cornea caused by swelling, scars, deposit.
Reduce visual acuity.
Nystagmus.
Light and glare sensitivity.
Contrast sensitivity.
Peters Anomaly (one type of clouding cornea).

Treatment

Laser and surgery (transplant) but dystrophy tends to recur.

CVI

Due from damage of the optic radiation, visual cortex or associated areas.
Leading cause of visual impairments in children.
Most common cause: schema (inadequate blood supply), hypoxia (inadequate oxygen supply) around time of birth.
75% of children with CVI have other neurological problems (seizure, cerebral palsy).
Visual field defect.
Fluctuating vision.
Prefer certain colors.

Don’t like novelty.
Stairing to bright light.
Light sensitivity.
Turn vision away when grabbing objects.

Diabetic retinopathy

Start with swelling of the lens.
Cataracts.
Reduce visual acuity.
Visual field loss.
Can cause macular edema and retinal detachment.

Treatment

Laser but can decrease vision and create blind spots.Use of low vision devices and environmental modifications can improve vision.

Ectopia lentis

Displacement of the lens behind the pupil.
Reduce visual acuity.
Development of astigmatism.

Treatment

Lens removal.
Correcting refractive errors

Familial excitative vitreoretinopathy

Inherited disease.
Blood vessels in the retina suddenly stop growing.
New blood vessels create scars.
Displacement of the macula.
Retinal detachment.
Reduce visual acuity.
Nystagmus.
Strabismus.

Treatment

Use of magnification and low vision devices.

Glaucoma

Damage to optic nerve.
Often associated with blood pressure in the eye, but only a factor.
Other factors are impaired blood flow to the optic nerves.
Progressive vision field decrease in peripheral.
When reaching central field, vision acuity reduces.
Contrast and glare sensitivity.

Close-angle

Drainage system of the eye is blocked.
Sudden high pressure.
Reduced vision due to the swelling of the retina.

Open-angle

Increase pressure is slow and symptoms are rare.
Progressive vision loss.
More common form of glaucoma.

Treatment

Eye drops, oral medication.
Laser or surgery to reduce blood pressure and increase drainage.
Use of magnification.
Control light, contrast and glare.

Hemianopsia

Affects half of the visual field.
Damage to the optic pathway and tract.
Caused by trauma, injury, stoke.

Histoplasmosis

Permanent scaring of the retina.
Fongal infection caused by bird and bat droppings.
Scaring near the macula cause reduce visual acuity.
New blood vessels can grow and leak.

Treatment

Laser to eliminate new blood vessels.
Laser near the macula can weaken vision.
Use of magnification and low vision devices.

Keratoconus

Inherited disease.
Extreme corneal curvature defects.
Reduce visual acuity.

Treatment

Contact lenses.
Corneal transplant.

Macular degeneration

Affects the macula.
Has some hereditary conditions.
Various types.
Bilateral and progressive (best disease, chromatopsia).
Central acuity loss.
Peripheral vision, color and contrast are usually not affected, except in severe forms.
Associated with vascular disease and stroke.

Wet

Rare form.
Blood vessels grow under the macula.
Treatment: Laser.

Dry

More common form.
Con cells in the macula atrophies.
Treatment: None.

Treatment

Use of magnification and low vision devices.

Multiple sclerosis

Chronic, progressive, degenerative disease of the nervous system.
Autoimmune disease.
Inflammation of the optic nerve.
During inflammation, reduced acuity, contrast, color and visual field.

Treatment

Steroid, but color and contrast di not return.

Nystagmus

Involuntary eye movement.
Reduce or interfere with vision.
Poor vision creates nystagmus.
Oscillopsia in acquired nystagmus.

Treatment

Medication and surgery not convincing.
Use if magnification and low vision devices.

Optic atrophy

Degeneration of the optic nerve.
Pale optic disc.
Degeneration of the ganglion cells.
Damage to optic nerve, optic chiasm or optic tract can cause optic atrophy.
Can be congenital or acquired.
Vision loss ranges, but most of the time stable.
Color difficulty to mainly discriminate blue and yellow.
Blind spots through the central field.

In children

Can be due to infection, hypoxia or encephalis.

In adults

Can be due to trauma, tumor, arthritis or multiple sclerosis.

Leber optic neuropathy

Other form of optic atrophy.
Affects vision acuity, color and contrast.
Can affect one or both eyes.

Treatment

Rehabilitation is challenging, as magnification worsens attempts to improve vision.
Inverted colors can be effective for reading.

Optic neuropathy

Progressive disease.
Damage to optic nerve and fibers.
Due to heredity, inflammation, toxins, malnutrition, trauma, tumor, radiation, infection.
Reduce visual acuity.
Reduce visual field.
Contrast and color defects.
Central blind spots.
Can affect one or both eyes.

Treatment

Improvement of vision with treatment of underlying causes.

Optic nerve hypoplasia

Congenital disease.
Too few optic nerve axons resulting in a small optic nerve (small optic disc).
Causes are unknown.
Reduce visual acuity and visual field.

Septo optic dysplasia

Severe form of optic nerve hypoplasia.
In addition abnormal brain structure and hormon dysfunction.

Treatment

Use of magnification can be successful.

Persistent hyperplastic primary vitreous

Unability of the eye to fully develop.
In most cases, only one eye is affected.
Small eye.
Anterior chamber defects, cataracts, glaucoma, small optic nerve.

Treatment

Surgery for the cataracts, but can be dangerous and trigger retinal detachment and glaucoma.

Refractive errors

Inability to project a clear image on the retina.

Irregularity in the shape of the eye.
Blurry image/vision.
Types: myopia, hyperopia, astigmatism, presbyopia.
Usually affects both eyes.
Can lead to low vision if not treated.
Congenital myopia can be associated with other symptoms.

Treatment

Eye glasses or contact lenses.

Retinal detachment

In adult, is associated with diabetes, age-related macular degeneration (AMD), high myopia, tumor, vitreous detachment.
Flashing light and floater.
Reduce visual acuity only if the macula is involved.

Treatment

Laser or surgery.

Retinitis pigmentosa

Retina dystrophy.
Premature degeneration of the eye photoreceptors resulting in deterioration of the retina.
Night blindness and peripheral field loss.
Central field untouched.
Severe forms can cause mental retardation, hearing loss, heart diseases.

Treatment

Field enhancement devices.
Night vision googles, flashlight.
Use of magnification is limited due to loss of peripheral vision.

Usher syndrome

Inherited autosomal recessive.

Type 1

Pro-fond congenital hearing loss.
Balance syndrome.
Childhood onset retinitis pigmentosa.

Type 2

Congenital, partial, non-profound hearing loss.
Normal balance.
Later onset retinitis pigmentosa.

Leber congenital amaurosis

Inherited autosomal recessive.
Severe vision loss.
Cones and rods are non-functional.
Nystagmus due to poor central vision.

Retinoblastom

Most common eye cancer.
Inherited, if both genes are missing or inactive, cancer develops.

Treatment

Laser, surgery, chimo.
Regular monitoring.

Retinopathy of prematurity

Growth of regular blood vessels is incomplete.
New blood vessels growth thinner and can leak or scar.
Can lead to retinal detachment.
Caused by oxygen exposure after birth, blood transfusion, genetic predisposition and small weight.
Reduce visual acuity.
Reduce voelt of view.
Nystagmus.
Associated with strabismus, high myopia, optic atrophy, cerebral palsy, CVI.

Stages

1: Begins
2: Ridges appear
3: New blood vessels appear
4: Leaking and scaring
5: Retinal detachment

Treatment

Determined by location and stage.
Most cases not require treatment.
If so, laser or surgery, but cataracts and glaucoma can develop.

Stargardt disease

Macular dystrophy
Inherited autosomal recessive.
Reduce visual acuity.
Reduce visual field.
Delay to adapt to the dark.
Color red/green difficulty.

Treatment

Use of magnification effective.

Stickler syndrome

Inherited autosomal dominant.
Causing high myopia, glaucoma, cataracts, retinal detachment, retinal degeneration.
Also, facial changes, hearing loss and joint disease.

Treatment

Refractive errors.
Monitor retinal detachment.
Use of magnification.
Increase lighting to support reading.

Strabismus

Inherited but can be acquired due to trauma, partial paralysis and restriction.
Misalignment of the eyes.
Resulting in diplopia or suppression.
May become a permanent suppression and lead to vision loss.
Can cause amblyopia.

Tropia

Esotropia: Turning toward the nose
Exotropia: Turning toward the temporal side
Hypertropia: Upward
Hypotropia: Downward

Treatment

Patching the better eye.
Surgery for adults.

Stroke

Damage to the brain due to blockage of blood flow from trombones, embolism or hemorrhage into the brain.
Most common cause is ischemia.
Reduce visual field depending on where the stroke appears.

Treatment

Medication, surgery.

Toxoplasmosis

Most common cause of retinal scaring.
Parasitis transmitted from mother to child during pregnancy or acquired from cat faces or raw meat.
Scars on retina cause reduce visual acuity.
Severe vision loss is rare.

Treatment

Medicine to kill the parasite and stop inflammation.

Uveitis

Inflammation of one or more areas of the eye.
Slowly progressive.
Unknown cause.
Reduce visual acuity and pain.
Vision unstable.
Can cause cataracts, glaucoma, retinal detachment, bleeding vitreous, swelling macula.

Iritis

Anterior chamber

Choroiditis and chororetinitis

Posterior chamber

Treatment

Medication to reduce inflammation.
Surgery not recommended for uveitis.
Modify lighting to reduce glare and light sensitivity.