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Handbook of common childhood disorders of the eyes for parents and educators

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Abstract

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Handbook of Common Childhood Disorders of the Eyes for Parents and Educators

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&

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Handbook of Common Childhood Disorders of the Eyes for Parents and Educators

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BIOGRAPHICAL SKETCH

Sonia Kim Chung

Sonia Kim Chung graduated cum laude from Boston University with a B.A. in psychology and a minor in biology. She will graduate from Pacific University with a Doctorate in Optometry and a Masters of Education in Vision Function in Learning May 2001. After graduation, Sonia plans to move to Arizona, where she will be specializing in children's vision, including vision therapy.

Huy Hoang

Huy Hoang graduated from the University of Calgary with a B.S. in Zoology and an M.S. in Vision Science. He will graduate from Pacific University with a Doctorate in Optometry May 2001. After graduation, Huy plans to do a residency in Family Optometry, then settle in the Seattle area.

INTRODUCTION:

A child's eyes are the most valuable tools for learning her environment. Most of what we learn comes from the visual senses. Vision is therefore one of the most important elements in the development of a child.

Unlike the general misconception, vision is more than just seeing 20/20. A child with normal 20/20 vision may still have underlying diseases and poor binocular ability. In order for our eyes to work optimally, it must be free of diseases, and the two eyes must work efficiently together as a team.

This handbook is not intended to be used as a treatment protocol. Its purpose is to increase the reader's level of understanding about common pediatric diseases and binocular conditions. The content of these pages is not intended to take the place of an eye examination, or the advice from a licensed eye doctor.

Some parents often wonder when to bring their child in for an eye exam and what type of information an eye exam will give. We believe that children of all ages should be examined annually, or at least be screened. In the early years while a child is undergoing many developmental changes, there are many visual conditions that could be managed easily. However, if left untreated, these conditions may have long lasting effects on a child.

An eye exam will yield much information about the eye health, body health, and how the brain works. Many children's behavioral problems, such as avoidance of close work in school, can be due to a visual problem. Therefore, if a learning disability is suspected, the child should be examined by an eye doctor.

We hope that this book will help dispel some of the myths and misconceptions about children's eye problems. It should also help guide you to know when to turn for help.

Handbook of Common Childhood Disorders of the Eyes for Parents and Educators

By:

Sonia Kim Chung

&

Huy Hoang

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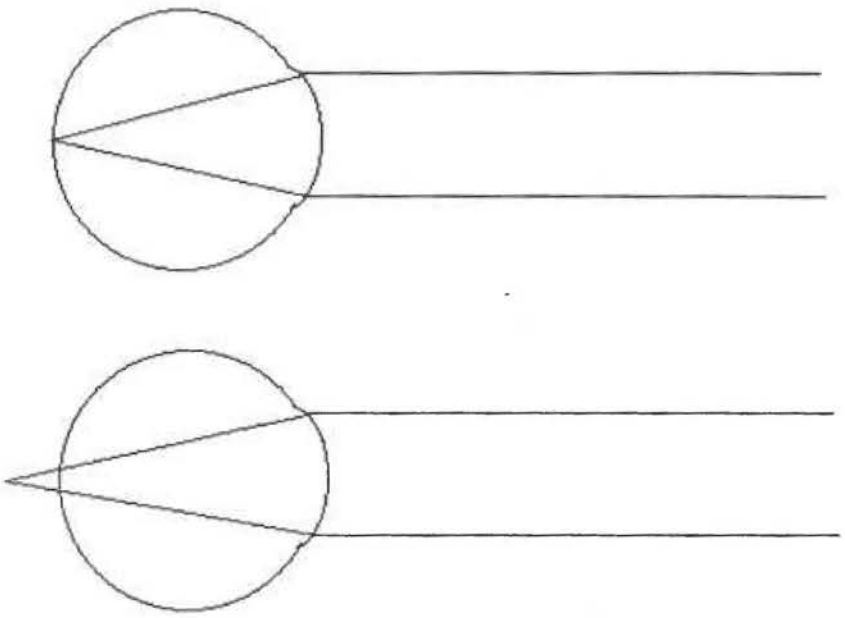
General Binocular Dysfunction

Ocular Disease

HYPEROPIA (FAR-SIGHTEDNESS)



Top diagram: normal eye where light focuses onto the retina
Bottom diagram: hyperopic eye (far-sightedness) where light focuses behind the retina

Hyperopia

AKA: Hypermetropia, farsightedness

Definition: For proper eyesight, the cornea and the lens must properly focus light onto the retina. If the length or shape of the eye is not ideal, the light may not be focused enough. The focusing power of the hyperopic eye is not strong enough to focus on the retina, possibly due to the lens being too weak, the cornea's shape, or the eyeball being too short. Light will be focused *behind* the retina, instead of *on* the retina. This condition makes it difficult, but not impossible, for a child to focus on objects. The child must add extra focusing power than average to clearly see nearby objects. With low to moderate hyperopia, distance objects may be viewed as clear, hence the child may pass the school vision screening (20/20 on a Snellen Acuity chart).

Cause: hereditary influences seem to play a key in becoming hyperopic. Environment does not seem to have much of an effect.

Symptoms: A child with hyperopia may not have poor vision up close, but more likely experience discomfort or eyestrain after long periods of near work. The child may sometimes see blur in the distance, especially after prolonged near work. Other symptoms a child may experience:

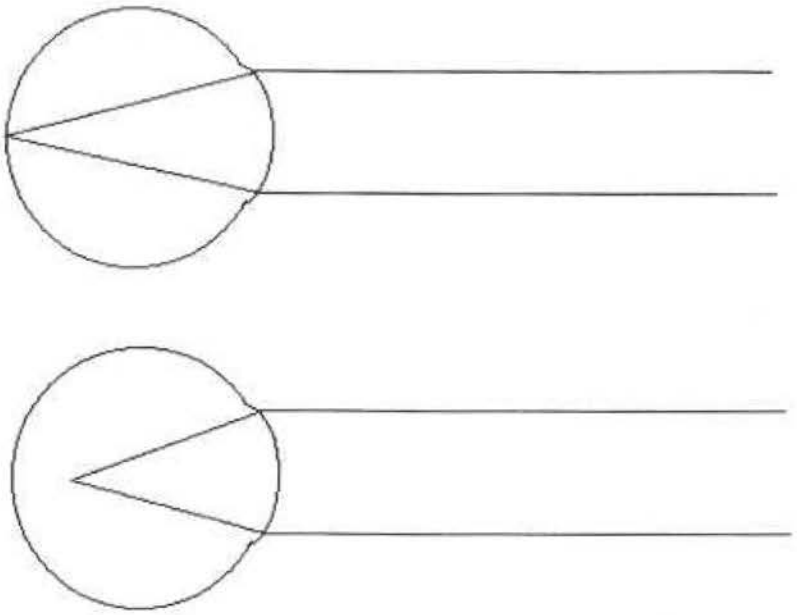
- Print blurring after reading
- Nausea or dizziness
- Fatigue after near work
- Headaches in the forehead or temples
- Burning or itching eyes after reading or deskwork

Signs: Parents should look for behaviors indicating avoidance of near work. For example, a child may "act out" when faced with doing near work. Other signs to look for:

- Eye turned in ("cross-eyed")
- Reddened eyes
- Eyes excessively tearing
- Blinking excessively at desk tasks/reading
- Closing or covering an eye
- Rubbing of the eyes during near work
- Substitution of similar words while reading
- Makes errors in copying from reference book to notebook
- Decreased reading comprehension with time

Treatment: referral to an eye doctor, preferably to a functional vision care specialist. The doctor will determine the amount of farsightedness, then prescribe corrective plus contact lenses or glasses to be worn part-time or full-time, depending on the degree of hyperopia. The purpose of the lens is to relieve eyestrain.

MYOPIA (NEAR-SIGHTEDNESS)



Top diagram: normal eye where light focuses onto the retina
Bottom diagram: myopic eye (near-sightedness) where light focuses in front of the retina

Myopia

AKA: Myopiosis, nearsightedness

Definition: For proper eyesight, the cornea and the lens must properly focus light onto the retina. If the length or shape of the eye is not ideal, the light may get focused too early. The focusing power of the myopic eye is too strong to focus on the retina, possibly due to the lens being too powerful, the cornea's shape, or the eyeball being too long. Light will be focused *in front* of the retina, instead of *on* the retina. This condition makes it difficult to see distance objects, although near objects will be clear. The child will most likely fail the school vision screening (not 20/20 on a Snellen Acuity chart).

Cause: Hereditary causes and environment (near point stress*) seem to play a key role in becoming mypopic. Other factors may be prematurity and history of a high fever.

*Note:Near point stress is the theory on myopia development. Although the human eye is not suited for prolonged near work, with the introduction of higher learning, more time is spent focusing at a close distance. This generates stress on the focusing system of the eye, which brings about an adaptation to relieve the near working distance stress. The adaptation brings the distance focusing point closer towards the person, making the individual "nearsighted."

Symptoms: A child with myopia may not have problems seeing up close, but will complain of blur when viewing distant objects. For example, the child will have no problems clearly seeing a page in a book, but will have problems seeing the chalkboard. Other symptoms a child may experience:

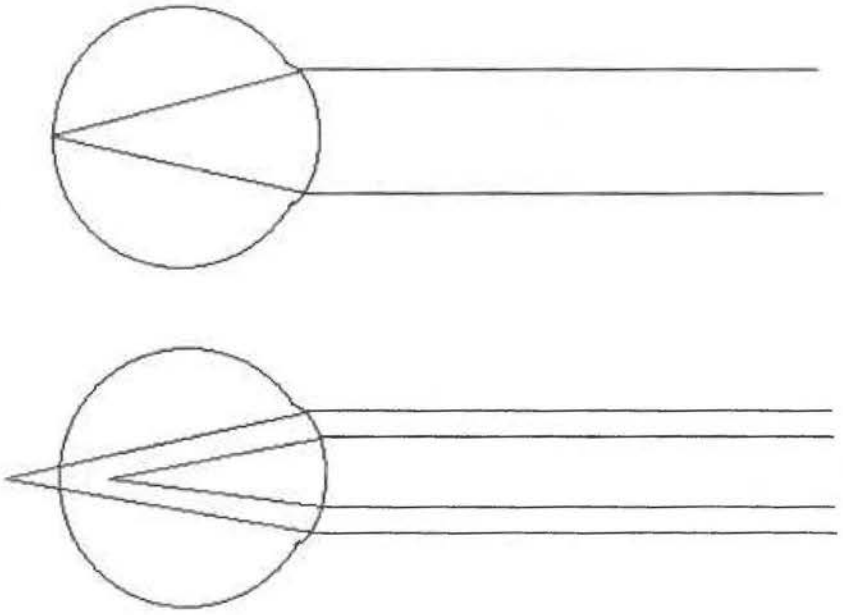
Headaches in the forehead or temples
Burning or itching eyes

Signs: Parents should look for any squinting when viewing distant objects. Other signs to look for:

Request to move nearer the board
Avoidance of tasks involving distance viewing, i.e. sports
Reddened eyes
Close working distance
Makes errors in copying from the board to paper on desk
Closing or covering one eye

Treatment: referral to an eye doctor, preferably to a functional vision care specialist. The doctor will determine the amount of nearsightedness, then prescribe corrective minus contact lenses or glasses to be worn part-time or full-time, depending on the degree of myopia. The purpose of the glasses is to clear the distance vision. In addition to glasses, the doctor may suggest one or more of the following: sitting closer to the board,a low magnification reading prescription to relieve near point visual stress, good visual hygiene (good lighting, visual breaks every 15 minutes, good posture—*refer to your eye doctor for specifications), and correct working distance (the near object of regard should be no closer than the distance between the middle knuckle of a fist and the elbow—when placing the knuckle at the nose, the elbow should reach the table).

ASTIGMATISM (SQUINT)



Top diagram: normal eye where light focuses onto the retina
Bottom diagram: astigmatic eye where light
focuses at two different points

Astigmatism

AKA: Astigmia, Squint

Definition: the focusing power of the eye is not even in all directions. Typically, it is caused by the cornea not being smooth and round; it has an uneven curve. Light is unevenly bent into two points instead of one, which the lens cannot bring together to make one clear image. This condition makes it difficult for a child to clearly focus on distant *and* near objects. If the child has significant astigmatism, the entire environment may appear blurry, tilted, and/or distorted.

Cause: many factors contribute to the development of astigmatism, including heredity, race (Native American), prematurity, Fetal Alcohol Syndrome, and posture effects (an off-center reading posture).

Symptoms: A child with astigmatism may have poor vision in all distances. For example, the child will have problems clearly seeing a page in a book *and* problems seeing the chalkboard. They may complain of eyestrain or discomfort. Other symptoms a child may experience:

Fatigue
Headaches in the forehead or temples
Burning or itching eyes after reading or deskwork

Signs: Parents should look for behaviors indicating avoidance of near work. For example, a child may "act out" when faced with doing near work. Other signs to look for:

Squinting in all distances
Reddened eyes
Eyes excessively tearing
Closing or covering an eye
Rubbing of the eyes
Mispronouncing similar words
Makes errors in copying
Decreased reading comprehension

Treatment: referral to an eye doctor, preferably to a functional vision care specialist. The doctor will determine the amount of astigmatism, then prescribe corrective contact lenses or glasses. The astigmatism may be so slight that the doctor may just monitor for changes instead of correcting it immediately. If, however, the astigmatism is significant but remains uncorrected, the child (under age 7) may develop amblyopia in one meridian. An amblyopic eye *cannot* achieve 20/20 vision even with correction. (See page on Amblyopia).

Oculomotor Deficiency

AKA: Tracking, pursuits, saccade problems

Definition: There are two types of movements that are used for scanning the environment, pursuits and saccades. Pursuits hold the image of a moving target on the fovea, the part of the retina that has the finest resolution. Problems in this area will hinder the child from being able to smoothly and accurately follow an object, such as a baseball. Saccades are rapid eye movements that get the eyes to the point of interest. For example, if a child sees something in his peripheral vision, he will use saccades to move the eyes to look at the object. Saccades are important in the reading process; saccades lead the eyes to the next sequence of words to be read. Problems in this area will make pointing the eyes accurately to the object of regard difficult.

Cause: developmental skill—proper development may be interrupted or slowed by gross motor delays, fine motor delays, and/or lack of appropriate opportunity.

Symptoms: A child with oculomotor deficiency may complain of poor reading comprehension. The child is not able to quickly and accurately locate words or information, will tend to reread the same line in a text, lose his/her place, and/or become fatigued with reading. Some other symptoms a child may experience:

- Short attention span
- Skipping lines
- Re-reading lines or words

Signs: Parents should look for a child displaying short attention span while doing work that requires any tracking or reading. Other signs to look for:

- Head turning as the child reads across the page
- Using a finger or marker to keep place
- Omitting words, especially "small" words
- Slanted writing, either uphill or downhill

Treatment: referral to an eye doctor, preferably to a functional vision care specialist. The doctor will assess how well the two eyes move together as compared with age expected eye movements. The only treatment is vision therapy to teach the child how to use his eyes more efficiently and effectively. If left untreated, oculomotor deficiencies may hinder a student's ability to become a proficient reader. However, the doctor may decide not to treat and monitor for developmental improvements.

Convergence Excess

AKA: Eye Teaming excess, Convergence Excess Esophoria

Definition: Convergence is the inward movement of the eyes when looking at objects up close. Convergence excess is a condition where the child *over*converges for the object of regard at near distances. Instead of focusing on the book, a child will misjudge the distance and focus in front of the book, *closer* towards the body.

Cause: nearpoint stress

*Note:Near point stress is the theory on myopia development. Although the human eye is not suited for prolonged near work, with the introduction of higher learning, more time is spent focusing at a close distance. This generates stress on the focusing system of the eye, which brings about an adaptation to relive the near working distance stress. Overconverging for near distances is one such adaptation.

Symptoms: the child may have difficulty reading a book on their desk, and increased difficulty when the book is pulled closer to them. Some symptoms a child may experience:

- Headaches
- Eyestrain
- Blurring of words after short periods of reading
- Doubling of words after prolonged near work
- Nausea and dizziness
- Drowsiness when reading
- Itchy eyes after near work

Signs: Parents should look for behaviors indicating avoidance of near work. For example, a child may "act out" or fall asleep when faced with doing near work. Other signs to look for:

- Head tilt during deskwork
- Paper tilt (paper held at an angle)
- Poor depth perception
- Light sensitivity
- Closing or covering an eye
- Repetition and omission of letters in words
- Decreased reading comprehension with time

Treatment: referral to an eye doctor, preferably to a functional vision care specialist. The doctor will assess how well the eyes team together to see single and clear at different distances. Part-time (near work only) glasses or bifocals may be prescribed to relieve the near point stress. The glasses are not intended to make the words clearer, but to make the task more comfortable for the child. Vision therapy to help the child use their eyes more efficiently may be an option.

Convergence Insufficiency

AKA: Eye Teaming insufficiency, Convergence Insufficiency Exophoria

Definition: Convergence is the inward movement of the eyes when looking at objects up close. Convergence insufficiency is a condition where the child is unable to *maintain* a converged eye posture over a period of time, hence tends to *under*converge for the object of regard at near distances. Instead of focusing on the book, a child will misjudge the distance and focus *behind* the book.

Cause: nearpoint stress

*Note:Near point stress is the theory on myopia development. Although the human eye is not suited for prolonged near work, with the introduction of higher learning, more time is spent focusing at a close distance. This generates stress on the focusing system of the eye, which brings about an adaptation to relive the near working distance stress. Underconverging for the distance is one such adaptation.

Symptoms: A child with convergence insufficiency may complain of fatigue when reading. As the viewing distance becomes closer, the child will experience more problems. For example, the child may have problems reading a book on their desk, but will have *more* problems when the book is pulled closer to them. Some symptoms a child may experience:

- Headaches
- Eyestrain
- Sleepiness when reading
- Doubling of words after prolonged near work
- Nausea and dizziness

Signs: Parents should look for avoidance behaviors for near work. For example, a child may become tired and actually fall asleep when faced with doing near work. Other signs to look for:

- Head tilt during deskwork
- Paper tilt (paper held at an angle)
- Poor depth perception
- Light sensitivity
- Closing or covering an eye
- Repetition and omission of letters in words
- Decreased reading comprehension with time

Treatment: referral to an eye doctor, preferably to a functional vision care specialist. The doctor will assess how well the eyes team together to see single and clear at different distances. Vision therapy is the most effective treatments to remediate the lack of ability for the eyes to hold their position during near work. Vision therapy will help the student to perform more comfortably and for longer periods of time because of the increased flexibility and endurance. The use of prism in glasses may also be prescribed. Prisms place the image of the object at a place that is easier for the eye to focus on, thus relieving the stress off the eyes.

ESOTROPIA (CROSS-EYED)

Esotropia

AKA: Cross-eyed, Strabismus

Definition: an eye that turns in towards the nose, giving the appearance of being cross-eyed. If the eye only turns in while doing close work (the eye is straight when looking in the distance), it is termed accommodative esotropia. This indicates an overfocusing problem; the extra effort makes the eye turn inward. If the eye turn is present at all times and in all distances, it is termed non-refractive esotropia, and may be due to either a muscle imbalance, or a combination of muscles imbalance and overfocusing. The eye muscle nearest the nose may be relatively unopposed by the outer eye muscle, causing the eye to turn inward.

Cause: Accommodative esotropia is usually due to significant uncorrected/undiagnosed hyperopia (far sightedness). Non-refractive esotropia may be due to hereditary causes, an ocular restriction, a muscle paralysis, childhood cataract, corneal opacity, nerve inflammation, trauma to the nervous system, or a tumor.

Symptoms: A child with esotropia may complain of double vision if both eyes are "seeing," or the child may have no complaints if one is "turned off" (suppression). The child may also experience fatigue with near work, at which point more symptoms will be noticed. Some other symptoms a child may experience:

Disappearing print on a page
Moving print on a page
Blurring of words
Headaches

Signs: Parents should look for eye turns, either intermittent or constant. Having the child look directly at a penlight can most accurately assess this. The reflection of the light should be centered in the pupil equally in both eyes. Other signs to look for:

Head tilt or turn
Blinking in order to bring the eyes back to alignment
Red eyes, especially in the area where the muscles attach
Eyes tearing excessively
Closing or covering an eye

Treatment: referral to an eye doctor, preferably to a functional vision care specialist. The doctor will assess whether the eye-turn is due to an overfocusing problem, or due to other reasons. In the former case, glasses may be prescribed to reduce the focusing effort, hence helping to keep the eyes aligned. In the latter case, the eye doctor may refer the child to a pediatrician or a neuro-ophthalmologist. If the eye turn is significant, the doctor may refer the child to a strabismus surgeon for eye muscle surgery. In either case, vision therapy can be used to teach the child to have better control over the eye. Vision therapy after surgery will help the child to adapt, which may prevent the need for further surgeries. If left untreated, esotropia may lead to amblyopia. (See page on amblyopia)

EPICANTHAL FOLDS

Epicanthal Folds

Definition: - a fold of skin draping the nasal part of each eye, seen in young children. The extra skin may give the illusion of an eye turn (esotropia), when in fact, the eyes are straight and aligned.

Symptoms: No symptoms

Signs: Parents should objectively look at the child's eyes for any turning. The most accurate method is to have the child look directly at a penlight that is pointing straight at the child's eyes. The reflection of the light should be equally centered in each pupil, i.e. equally displaced to the left or right. If the light reflection is unequal, refer the child to a vision care specialist.

Treatment: No treatment. The child will grow out of his condition.

Exotropia
AKA: Wall-eyed, Strabismus

Definition: an eye that turns outwards away from the nose, giving the appearance of being "wall-eyed." If the eye only drifts out once in awhile, for example in the evenings when tired, it is termed intermittent exotropia. If the eye is turned out at all times and in all distances, it is termed constant exotropia.

Cause: Exotropia can be caused by many factors, ranging from nerve problems and tumors, to systemic conditions like myasthenia gravis. An outward turning of the eye may indicate a serious underlying problem, and should be assessed by a vision care specialist as early as possible.

Symptoms: A child with exotropia may have no complaints if one eye is "turned off" (suppression) or the child may complain of double vision if both eyes are "seeing." The child may also experience fatigue with near work. Some other symptoms a child may experience:

- Disappearing print on a page
- Moving print on a page
- Blurring of words
- Headaches

Signs: Parents should look for eye turns, either intermittent or constant. Having the child look directly at a penlight can most accurately assess this. The reflection of the light should be centered in the pupil equally in both eyes. Other signs to look for:

- Head tilt or turn
- Blinking in order to bring the eyes back to alignment
- Red eyes, especially in the area where the muscles attach
- Eyes tearing excessively
- Closing or covering an eye
- Squinting one eye

Treatment: referral to an eye doctor, preferably to a functional vision care specialist. The doctor will assess the eye-turn by looking at the degree of the turn, degree of head tilt, fusion ability (ability to realign the eyes), and the amount of time the eye is turned out. At this point, the doctor may recommend vision therapy to build up the ability to realign and use both eyes efficiently. Glasses with extra minus or prism may also be prescribed. If the eye turn is significant, the doctor may refer the child to a strabismus surgeon for eye muscle surgery.

Amblyopia

AKA: Lazy eye

Definition: An eye that cannot achieve optimal vision (20/20) with correction, in the absence of any eye disease.

Cause: a child can develop amblyopia for many reasons. The main basis for its development is *disuse*. As the brain suppresses the information from one eye (for whatever reason), the brain assumes that the eye is not contributing any information to the visual process. Hence, the brain starts to ignore the fine-detail function of that eye, and this behavior gets embedded. Some factors for suppression of one eye are: one eye is more nearsighted or farsighted than the fellow eye, an eye turn is present (usually esotropia), and/or if one eye is deprived of stimulation due to an opacity, like a cataract, during infancy. If both eyes are deprived of environmental stimulation (i.e. bilateral cataracts), the child can develop amblyopia in both eyes.

Symptoms: A child with amblyopia may not have complaints, and may not even notice that one eye does not see as well as the other. However, the child may show signs of poor or absent depth perception, such as bumping into objects, poor sports abilities like baseball, etc.

Signs: Parents should look a strong preference for one eye over the other. Infants may cry or fuss when the better seeing eye is covered. Other signs to look for:

Head tilt during deskwork
Paper tilt (paper held at an angle)
Poor depth perception
Closing or covering an eye

Treatment: referral to an eye doctor, preferably to a functional vision care specialist. The doctor will assess the severity of the amblyopia. One treatment for amblyopia is vision therapy. Therapy may be successful (therapy may not be successful in some cases) at any age, however, it is generally easier if the amblyopia is of recent onset, i.e. when the child is very young. With therapy, the amblyopic eye has a chance to regain normal function. The doctor may also prescribe a schedule of patching the non-amblyopic eye to penalize it, giving the amblyopic eye a chance to develop and function. Penalization may also be done with the use of Atropine drops.

BLEPHARITIS

Blepharitis

Definition: Blepharitis is an inflammation of the eyelid. This type of inflammation may or may not be infectious. Blepharitis is typically caused by a combination infection (by Staphylococcal bacteria) and dysfunction of an oil gland in the lid. The disease tends to be chronic in nature.

Symptoms: Children with blepharitis may not have symptoms, or they may complain of itchy or burning eyes, crusting around the eyes, and tearing. The symptoms are usually worse in the morning. Occasionally, the eyes may glued shut upon awakening.

Signs: The signs of blepharitis include scaling, crusting, and redness along the lid margins, abnormal appearances of lashes, and/or waxy, greasy appearance of lids. Some of these signs may be subtle and may only be noticed by an eye care professional.

Treatment and management: Due to the chronic nature of this disease, it may only be controlled and possibly not completely eliminated. The key treatment is prevention with proper lid hygiene. For a mild case, it is recommended to do the following at least two times everyday.

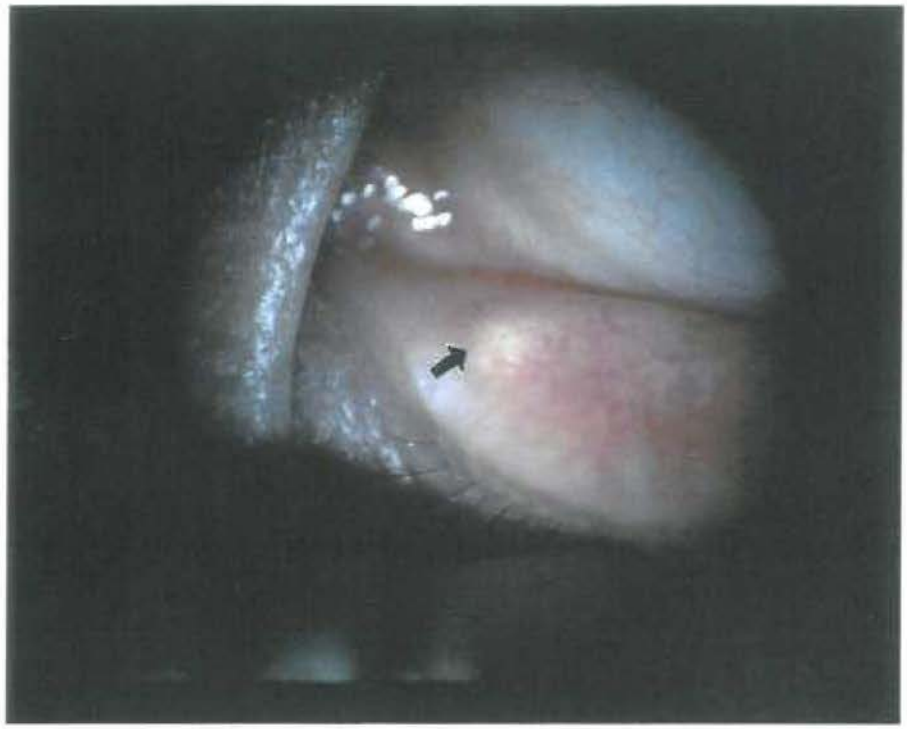
Scrub the eyelid margins with a mild baby shampoo on a cotton swab to loosen the scales and discharge to reduce the bacterial population. Apply hot compresses over each eye with a washcloth for 5 minutes. Use artificial tears at least 4 times per day to help with eye irritation.

For a moderate to severe case, the lid scrubs and warm compresses may have to be done four times per day. Oral and topical antibiotics, and sometimes steroids, may be needed. **Children younger than 8 years of age should not be prescribed tetracycline and doxycycline.**

In all case of blepharitis, the lid hygiene procedure must be done indefinitely at least one to two times per day.

It is important that your child be seen by an eye care professional when you suspect a blepharitis for a thorough evaluation and treatment.

HORDEOLUM



Hordeolum (Stye)

Definition: A hordeolum is caused by acute infection of the glands in the eyelid. The infection is typically caused by the bacteria *Staphylococcus aureus*.

Symptoms: Red bump on lid. It is tender when touched.

Signs: Stye is usually seen as a localized, painful, red, and swelling lump within the eyelid, normally near the lid margin.

Treatment and management: The standard treatment for a stye is warm compresses 4 times a day until it resolves, or enlarges and comes to a head. A hordeolum typically resolves in about a week. If the infection progresses to other areas of the lid, forehead, and/or cheek, the patient should see an eye doctor as soon as possible. In this case, the hordeolum may be surgically removed or treated with oral antibiotics.

Chronic blepharitis can cause styes, so it is important to perform warm compresses and lid scrubs indefinitely.

If you are unsure of the type of lumps and bumps your child has, be sure to have your child examined by an eye care professional. A very large chronic lump can potentially press on the globe of the eye, causing astigmatism, and even amblyopia (lazy eye).

CONJUNCTIVITIS (PINK EYE)

Pink eye (conjunctivitis)

Definition: Conjunctivitis is the infection or inflammation of the lining of the white surface of the eye and the underside of the eyelids. There are 3 types of conjunctivitis: bacterial, allergic and viral conjunctivitis. Although the three types may look similar, they may have different signs and symptoms, and need to be treated accurately for effective management of the condition.

Bacterial conjunctivitis

Definition: Bacterial conjunctivitis is usually caused by Staphylococcus aureus. But other bacteria can be responsible: Streptococcus pneumoniae, Hemophilus influenzae, Neisseria gonorrhoeae, Pseudomonas, Escherichia coli. Knowing the type of bacteria infected can be crucial to the treament and management.

Symptoms: Eye may feel irritated and/or painful. Lids may be stuck together in the morning, and the child may be sensitive to light.

Signs: Redness on the white part of eye, yellow or greenish discharge, and crusty lids, especially on awakening.

Treatment and Management: Bacterial conjunctivitis is highly contagious. **Avoid** physical contact. Treatment requires lid hygiene to remove debris, warm compresses 4 times a day, and topical antibiotic. For preventive measure, treat both eyes. **Never** patch a conjunctivitis. Since many complications may follow a bacterial conjunctivitis, it should be thoroughly evaluated by an eye care professional.

Allergic conjunctivitis

Definition: Allergic conjunctivitis is due to exposure to an allergan (antigen). The type of antigen causing the allergy may or may not be known. The primary feature of an allergy is itching. The child usually has a personal or family history of allergies.

Symptoms: Redness or pink color on the white part of eye, itchy eyes and tearing.

Signs: Stringy mucus discharge, small bumps (papillae) in the underside of the upper and lower eyelids.

Treatment and management: Prevention is the key. Avoid the cause when possible. Cold compresses can provide temporary relief. Oral antihistamines in a pediatric dose can be used to resolve some symptoms. Eye drop medications are also used when necessary, under the guidance of an eye care professional.

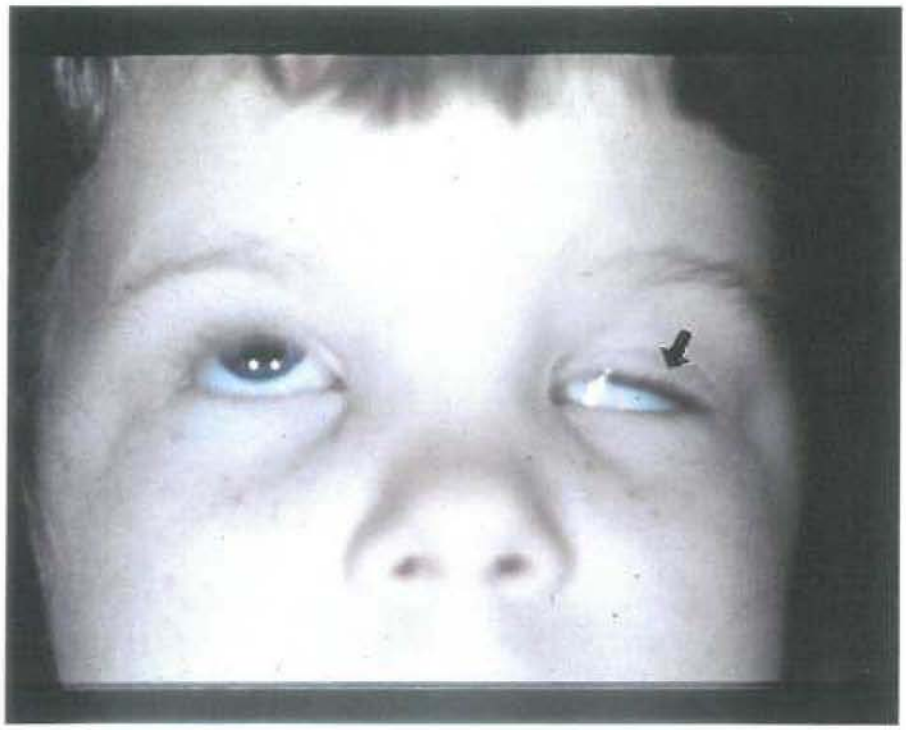
Viral conjunctivitis

Symptoms: Redness on the white part of eye, and sensitivity to light.

Signs: Redness less intense than bacteria, and watery discharge.

Treatment and management: Treatment for all viral conjunctivitis, except for herpes viruses, is palliative in nature. Like a common cold, one must let the condition runs its course. Cool compresses and rewetting drops can be used for symptomatic relief. In certain cases, especially with herpes viruses, antiviral therapy is necessary. It will be difficult for parents and teachers to distinguish between a herpes viral conjunctivitis and other viral conjunctivitis. If the child shows any unusual signs of pain, facial rash, or currently takes any eye drop medication, when the child has a pink eye, he should be examined by an eye care professional.

CONGENITAL PTOSIS



Congenital ptosis

Definition: Congenital ptosis is a noticeable drooping of the upper eyelid which has been presenct since birth.

Symptoms: Possible blurry vision if the lid blocks the center of the pupil, leading to a lazy eye. It may be associated with an eye turn.

Signs: Droopy eyelid. The ptosis may be accompanied by several conditions:
1) weakness of an eye muscle that moves the eye up, resulting in limited eye movement;2) the position of the lid is affected by movement of the mouth, as in feeding - (Marcus Gunn Jaw-winking syndrome).

Treatment and management: Eyelid surgical correction is the only treatment for a ptosis. Ptosis may improve as the child matures. An eye doctor should examine any child with a ptosis to avoid lazy eye (amblyopia).

Nasolacrimal duct obstruction

Definition: This obstruction is a common blockage of the lacrimal drainage system, usually at the nasal end of the duct.

Symptoms: The child will present with tears running over the cheeks, "wet" appearance to the eye, and recurrent conjunctivitis.

Signs: A test called the Jones' test will indicate an absent or decreased tear out flow to the nose.

Treatment and Management: Many newborn infants have nasolacrimal duct obstruction that spontaneously resolves within the first few weeks to months of life. If this does not happen, resolution can occur with daily massage of the duct between the nasal corner of the eye and the nose. Otherwise, treatment with a probing procedure is usually delayed until the child is at least 6-8 months old. The child is normally sedated in this procedure.

If a child has conjunctivitis (pink-eye) as a result of nasolacrimal duct obstruction, he needs to been seen by an eye doctor so that he can be treated with an antibiotic ointment.

EYE TRAUMA: CORNEAL FOREIGN BODY

Eye trauma

Corneal abrasion (scratched cornea) and/or superficial corneal foreign bodies

Definition: Corneal abrasion is one of the most common injuries to the eye. It is an abrasion to the clear front surface of the eye. The damage can be caused by any type of foreign objects (usually sharp or high velocity small objects) or even a fingernail. The abrasion can range from superficial (damage to the surface layer only) or deep without perforation to the globe of the eye.

Superficial corneal foreign bodies is a common pediatric problem where there is an embedded object in the clear front surface of the eye. The type of management depends on the nature of the object (eg. metallic, fiberglass, glass, and tree-branch).

Symptoms: The child will experience pain, grittiness (feels like something is in his eye), excessive tearing, light sensitivity, and blurry vision. With a superficial corneal foreign body, the symptoms tend to increase with time.

Signs: Red eye, lid spasm.

Treatment and management: It is important to find out what happened to the child for proper management. The child might be hysterical due to the pain. However, parents and teachers must try their best to examine the child thoroughly to look for any other type of injury to the head or body. Tell the child to refrain from rubbing the eyes.

If the pain is manageable have the child open her eyes and examine the eye thoroughly. Look for foreign objects. If an object is seen, attempt to flush it out with a plastic squeeze bottle or with running water under the sink or water fountain. Do not try to remove it with a stick or needle if you see embedded objects that are not flushed out. Take the child to an eye doctor for a thorough evaluation. The doctor may need to use an anesthetic to evaluate the eye due to lid spasm and tearing. Antibiotics and patching may be needed for healing and comfort.

If the child can't open his eyes, patch the damaged eye with a gauze or a cup. Then take the child immediately to an eye doctor for a thorough evaluation.

It is important to have the eye doctor examine to make sure there is no residual foreign bodies (especially underneath the eyelids) that could do further damage to the cornea.

Avoid patching as much as possible. Patching can cause bacteria to multiply and lead to serious infection. It should only be done by an eye doctor with careful monitoring.

A through evaluation by an eye doctor is necessary to expedite healing and minimize scarring, discomfort, and infection.

GLOSSARY

20/20 - "optimal" vision; a person can see at twenty feet what the population can see at twenty feet [e.g. A patient with "20/40" has reduced vision--he can only see at 20 feet what the population can see at 40 feet.]

Accommodation - the process by which the LENS of the eye changes shape, to allow us to see near objects clearly (without blur)

Amblyopia - one eye (or both) cannot achieve optimal vision ("20/20") with correction, in the absence of any eye disease

Anisometropia - a significant difference in the refractive status between the two eyes

Astigmatism - a variant condition of CORNEA shape, in which light is focused in two points near the back of the eye instead of one point. An astigmatism lens brings those two points of focus into one point of focus, to help eliminate blurring at all distances.

Bifocal - a type of spectacle or contact lens which includes both the distance portion of a person's prescription (at the top of the lens), as well as a near vision magnification lens (at the bottom of the lens). These lenses are used for both children and adults, but are more commonly associated with adults over 40 - 45 years of age.

Binocularity - the extent to which both eyes are used to focus and point to an object of interest

Ciliary Muscle - Anatomy: a muscle located inside the eye, behind the iris (colored portion); Function: to change the shape of the LENS, so that near objects can be brought into a focus on the FOVEA

Cornea - Anatomy: clear window of our eye; lies over the iris (colored portion); Function: bend light rays from environment (with the LENS) to bring them to sharp focus on the FOVEA

Convergence -the relative inward turn of each eye, for purposes of seeing a close object as single

Depth of Focus - the distance an individual can see clearly, measured from the person toward the horizon

Depth Perception - the ability to see three-dimensionally, and to judge distances in space; requires two eyes to be pointed at about the same place in space

Diplopia - a condition of seeing one object as two; Synonym: "Double Vision"

Divergence - the relative outward turn of each eye, from a nearpoint position, for purposes of seeing a distant object as single

Epicanthal Folds - a fold of skin draping the nasal part of each eye, seen in young children and in individuals of Asian ethnicity

Extraocular Muscles - Anatomy: six muscles--external to the globe, or eyeball; Function: move the eye up, down, left, right, or diagonal

Farsightedness - an ability to see farther objects better than nearer objects

Fine Motor Coordination - the ability to manipulate small objects

Fovea - the center point on the RETINA; the part of the retina which renders the sharpest, most distinct vision

Fusion - two-eyed coordination, such that an object seen in space is perceived as one object (e.g. the lack of double vision)

Gross Motor Coordination - the ability to coordinate large groups of muscles for the purpose of walking, dancing, sports accuracy, and maintaining posture

Hyperopia - an ability to see far objects clearer than near objects; synonym: "Farsightedness"

Interpupillary Distance - the distance measured, in millimeters, between the centers of each pupil

Lens - Anatomy: a transparent structure located behind the iris (colored part of eye); Function: to bend light rays from the environment (with the CORNEA) to bring them to sharp focus on the FOVEA

Myopia - an ability to see nearer objects; distant objects usually appear blurry. Synonym: "Nearsightedness"

Nasal (Nasally) - referring to the movement, part, or visual field of the eye closer to the nose; Antonym: "Temporal"

Nearsightedness - a better ability to see nearer objects; distant objects usually appear blurry

Nystagmus - an abnormal eye movement, in which the eyes beat repetitively (usually side to side)

Occupational Therapy - a health profession which specializes in remediating those functions affecting the work and / or play of the individual

THE THREE "O's:" OPHTHALMOLOGY, OPTICIANRY, OPTOMETRY

Ophthalmology - Degree: "M.D." Medical Doctor; Training: 4 years college, 4 years medical school, 1 year general clinic training, 3+ years ophthalmology residency, optional 1 year subspecialist training. Emphasis: disease, surgery of the eye, refraction

Neuro-ophthalmologist - specialty in neurologic and eye diseases; pathology expert in dealing with intracranial lesions (tumors, aneurysms, strokes) and their effect on the visual system Strabismus Surgeon - often a pediatric ophthalmologist, strabismus surgeons specialize in the surgical treatment of eye turns and eye muscle entrapment (which may cause a "pseudo-eye turn")

Opticianry - Certification: optional 2 year degree program. Emphasis: recommendation, production, and verification of spectacle eyewear; contact lens fitting; refraction.

Optometry - Degree: "O.D." Doctor of Optometry; Training: 4 years college, 4 years optometry school, optional 1 year specialist residency. Emphasis: refraction; screening and treatment for eye disease; concerned with the coordination of the eyes and function of the visual system.

Functional vision care specialist - specializes in the coordination of the visual system, and the effect its coordination (or lack thereof) has on the individual. Recommends lens prescription and/ or therapy to assist the student in becoming more visually comfortable in his environment. Rehabilitative optometry - the specialty of optometry which remediates visual deficits secondary to trauma (head / neck injury, stroke, etc.); another term for Vision Therapy

Orbital Rim - Anatomy: the bony area surrounding each eye; Function: to protect the eye, EXTRAOCULAR MUSCLES, and orbital fat from damage

Palsy - "paralysis;" loss of some degree of nerve input to a muscle or to a group of muscles

Pursuits - eye movements which hold the image of a moving target on the fovea

Refraction - the portion of an eye exam which tests the need for prescription lenses

Refractive Status - the degree to which a person is nearsighted, farsighted, or astigmatic

Retina - the sensory portion of the eye; Function: the sensory cells change light energy to electrical energy, which is carried to the brain via a system of nerves

Saccades - a rapid eye movement to an object of interest; it places the image of the object at the FOVEA

Sclera - Anatomy: the white part of the eye; Function: to encase and protect the inner contents of the globe, or "eyeball"

Snellen Test - the test in which vision acuity is measured, either with or without correction

Suppression - the brain turns "off" the image coming from one eye, in an attempt to alleviate eye strain or double vision [Diplopia]

Strabismus - a condition in which the two eyes are not aimed to the same point in space; the eyes are out of alignment. Synonym: "Eye Turn"

Temporal (Temporally) - referring to the movement, part, or visual field of the eye that is away from the nose; Antonym: "Nasal"

Vestibulo-Ocular Reflex - an eye reflex which keeps images steady on the retina during head movements.

Vision Therapy - the remediation of the following vision problems: eye movements, eye teaming, amblyopia, eye turn in / out / up / down, visual field neglect, eye-hand coordination, and visual perception. Treatment is aimed at restoring function to the visual system after loss, or refinement of a vision system which is uncoordinated. Vision therapy can also be utilized to for enhancement of adequate vision systems, to enhance sports performance, or to enhance reading / processing pace. Vision therapy is NOT exercising the muscles of the eye; it is better described as retraining how the brain processes visual information.

Visual Imagery - imagining how a scene appears, in absence of physical visual stimuli

Visual Closure - the ability to identify a partially-completed symbol (e.g. a clown figure without the face)

Visual Constancy - the ability to match two identical symbols from a composite of similar symbols with a variant characteristic

Visual Figure-Ground - the ability to identify the subject (figure) from distracting background information (ground)

Visual Form Recognition - the ability to match identical symbols from a composite of several different symbols (e.g. matching the figure of a square from the following choices: triangle, circle, square, trapezoid)

Visual Matching - the ability to pair physical stimuli (e.g. blocks, 2-dimensional pictures) with similar characteristics

Visual Memory - the ability to retain the mental image of a symbol, when the symbol is taken away from view

Visual Motor Integration - the ability to copy printed symbols without distortion nor major error

Visual Perception - the ability of several brain areas to identify and to react to the information taken in by the RETINA

Visual Sequential Memory - the ability to retain the mental image of multiple symbols, in a specific sequence, when the symbol sequence is taken away from view

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