

Infant's sight and vision with eye disorders paying attention.

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Abstract:

When a baby is born, baby's open eyes are contacted with you in the first time, it is a greatest moments. In the first week of life, infants do not see much details, look first in the world is not clear and unique in the shades of gray. The visual system of a newborn takes some years to develop. Knowing the milestones that develop the vision as well as abnormal eye signs is what you can do to help your baby. It can ensure your child is properly seen and fully enjoying their world. The pediatrician /ophthalmologist/health care staffs will check your infant's vision to monitor these changes and make sure their vision is developing as it should. Knowing what to expect can help you watch and enjoy your child's visual development. This article will review the basic sight, vision of a baby from birth to 1 year old with some eye disorders needing to pay attention.

Key words: infant's sight and vision, retinopathy of prematurity, strabismus, nystagmus.

1. Introduction:

Child's sight and vision are special issue of concern for tracking the normal as well as abnormal development to detect and to manage with on time and effectiveness. Knowing the development of vision is what you can do to help your baby as well as can help you monitor and enjoy your child's visual development. Pediatricians/ ophthalmologists/ health care workers will examine the vision of the child to monitor these changes and ensure the vision of the child is developing as desired. This article will review the basic sight, vision of a baby from birth to 1 year old with some common congenital eye diseases to pay attention.

2. Basic sight:

Normally, each eye sees an object for a picture and looks at the same time. Unified 2 eyes is a combination that creates a unified awareness by locating two central centers fixation. Each eye receives a picture that leads to the brain into a complete image. The first phase requires the eyeball intact; neurological complete visual interference; and corresponding normal retina. The next stage is the center of the cerebral ventricular image that will merge into a single image. Consequences have three scenarios: a best image; a slightly different image; there will be neutral phenomenon as stereoscopic image 3D; 2 distinct images need to be strongly neutralized or biased seeing with double images. Diplopia or double vision happens when 2 eyes are seen an object at the same time or binocular vision. If you look at one eye separately or monocular vision there is no diplopia, but in the case of tear of iris so you are looking through two pupils you still see two images. To understand binocular vision with two eyes need to know the following concepts. Visual function of the eyes is not innate. It is possible to go through the following stages:

2.1. Covision: Two eyes look for two different images at the same time on the retina.

2.2. Fusion: Two different-image snapshots become 1 on the retina. Visual contrast and corresponding retinal:

Fusion reflex is a conditional reflex that forms over time along with many other reflexes in the development of the child. Retinal corresponding: is a congenital phenomenon. Corresponding normal retina is located central fovea.

2.4. Fixation: Non fixation reflex can be due to deviation of refractive errors from 3-5 dioptres. Aveolar fixation is in normal cases. Extra aveolar fixation in the abnormal eye happens in case of trabismus. Intermittent strabismus is caused by the neutral phenomenon eye. Fixed strabismus is caused by the undeviated one eye (normal eye) and the deviated other eye (abnormal eye dues to paralysis).

2.5. Stereoscopia is a stereoscopic image. It is 3 dimensions space (3D) also one of the phenomenon of neutralization. If a person with damaged one eye in a middle-aged age, it is not right to pour water into glasses. Fixation reflex began to form in 6-month-old infants, with parallel focused reflex reaching 2 months of age. Convergence, accommodation, fusion reflexes are stable at 3 years old and visual vision is stable at 6-8 years old. Under normal conditions, all reflexes are operated by two rules: 1. Sherring suggested that when one side muscle contraction the other side is relaxation. 2. Hering noted that a neurological distribution equally to the muscles of eyeball.

3. Developing children's vision [1]

3.1 Newborn vision to 1 month:

Newborn vision begins at pregnancy and develops before at birth. The way you care for your body during pregnancy is extremely important for the development of your baby's body and mind, including the eyes and vision centers in the brain. Be sure to follow your doctor's instructions in pregnant time. Avoid smoking and drinking alcohol or

certain medications during pregnancy, these toxins can cause problems for your baby, including severe vision problems. Even taking regular medicines like aspirin can be dangerous for your baby while you are pregnant, increasing the risk of low birth weight and problems during labor. Low birth weight is associated with an increased risk of vision problems in newborns. Always notify your doctor before taking any medications during your pregnancy, including over-the-counter, herbal supplements, and other remedies without a prescription. Shortly after birth, your doctor will periodically check your baby's eye for signs of congenital cataract or other serious eye problems. Although eye problems are so rare, they must be detected and treated early to minimize the damage of developing your child's vision. Exposure to light during pregnancy is important in developing infantile vision. Does normal eye growth in newborns also need light even in the gestation? The journal *Nature* reported this finding based on studies of pregnant mice. Researchers have found that a light pathway controls the number of neurons in the retina. In rats this pathway has been activated for about 16 days from pregnancy. The light-responsive pathway that holds the blood vessels formed in the retina becomes too much to cause premature retinopathy, which can cause blindness.

An antibiotic ointment is often applied to the eyes of an infant to help prevent eye infections from bacteria present during birth. At birth, your baby only sees black and white and gray. The nerve cells in the retina and their brains control the vision that is not fully developed. In addition, the eyes of an infant are incapable of focusing on the near objects. This takes a time. Although there are visual limitations, studies show that within a few days after birth, infants prefer to look at a picture of the mother's face as a stranger. Researchers believe that this preference depends on the magnitude, the high stimulation contrast, the same as the boundary of the root of the hair with the face of the mother. So to encourage visual interaction with your newborn, keep your style of hair the same, and avoid altering your appearance. The baby's eyes cannot open wide as usual because at birth, the baby's eyes are 65% of their adult size! The baby's eyes are very sensitive to light in the first month of life. In fact, the amount of light required for a 1-month-old infant to realize that the current light is called the threshold of light detection compared to adults is 50 times higher. Keep your look right for your baby to recognize and interact with you after birth. Infants begin to develop the ability to see in color very quickly. At one week after birth, the baby can see red, orange, yellow and green. It takes a little longer for your baby to see blue and purple. This is because blue light has shorter wavelengths, and less color receptors exist in the human retina for light blue. Do not be too worried if your baby's eyes sometimes do not work together smoothly. An eye can sometimes glance or slip away from the proper link. This is normal. But if you see a large, continuous deviation for baby's eyes, notify your baby's eye care provider right away.

Advices: To help stimulate your baby's vision, decorate his room with bright colors, fun, includes works of art and furniture with contrasting colors and shapes. Also, hang a dazzling mobile phone above or near the baby's crib.

Make sure it has a variety of colors and shapes.

3.2 Development Vision: Month 2 and 3:

Many advances in vision development took place in month 2 and 3. Infants develop keener sharper images during this period, and the baby's gaze begins to move better. Your baby should be moving with the objects at this stage and begin to approach the things she/he sees. A bright room with a variety of colors and shapes will help stimulate your baby's vision. In addition, infants at this stage learn how to change the view from one subject to another without moving the baby's head. At three months, the baby's gaze becomes more sensitive to light and the light threshold of a child is less than 10 times the adult. So you can open a little more light for the nap and before going to sleep.

Advices: To help develop the vision of two to three month olds, the American Optometric Society (AOA) has recommendations:

- Add new items to your baby's room or regularly change the location of the crib or existing items in the room. Talk to your baby as you walk around the room.
- Keep a light at night to provide visual stimulation when you wake up in your baby's crib.
- While sleeping, babies should be placed on their stomachs to reduce the risk of sudden infant death syndrome (SIDS), put them in their stomachs when they wake up and you can monitor them. This provides important visual experiences and activities that help develop the baby. Only 18% of parents thought their infants had received a comprehensive eye exam before age 1, in a survey conducted by American Optometric Association (AOA) in 2011. Surveys, including responses from 1,000 American adults, were also found to be 61% as lazy eyes and 63% were aware that cross eyes could be present at birth. But less than a third know that cancer, farsightedness and myopia can also be found in neonatal ophthalmology. It is important to start treating these problems as soon as possible, to prevent developmental delays and permanent vision problems, as well as the life-threatening risk of eye cancer. This is why AOA recommends that all infants receive a comprehensive eye exam at 6 months of age.

3.3 Development Vision: Month 4 to 6:

How to tell your baby's visual development is fast! At 6 months of age, significant progress has been made in the vision centers of the brain, allowing your newborn to see more clearly and move. The eyes are faster and more accurate to track moving objects. Visual acuity improves from about 20/400 at birth around 20/25 at 6 months of age. Look similar to the color of the adults as well as facilitate your child to see all the colors like the rainbow. They also have better hand coordination between 4 and 6 months, allowing them to quickly locate and identify objects such as a bottle mouth. Six month old is also a milestone as this is when your baby should have his first eye exam. Although your baby does not know the letters on a wall chart, your ophthalmologist may actually non-verbal language testing for visual acuity assessment, myopia detection, farsightedness and astigmatism, and eye assessment of collaboration and linkages. At this test, the examiner will also examine the health of her baby's eyes and look for anything that may interfere with normal vision development and continuity. For the most comprehensive eye exam for 6 months, you can look for the services of an optometrist specializing in vision and development vision.

3.4 Development Vision: Month 7 to 12:

Your baby is now mobile, crawling and covering larger distances than you can imagine, at distance evaluate and more accurately grasp and throw objects. This is an important stage of development for your child. At this stage, newborns are developing a better awareness of their overall body and are learning how to coordinate their vision with the baby's body movements. It is also time to ask for greater diligence on your part to keep your baby from harm. Collisions, bruises, serious eye injuries can occur as babies begin to physically explore their environment. In particular, keep the cabinet containing supplies locked, and place barriers in front of the stairs. Do not worry if your baby's eyes are starting to change colors. Most babies are born with blue eyes because darker pigmentation in the iris does not completely develop at birth. Over time, darker colors are produced in the iris, which usually changes the color of your child's eyes from blue to brown, green, gray, or a mixture of colors.

Advices: To stimulate the development of the eye coordination of your child's hand, get down on the floor and encourage the baby to collect for the toy. Put a favorite toy on the floor and at your finger and encourage your baby to get it. Can also provide a variety of objects and toys that baby can put and put together.

4. Infant and child's eye problems need special attention:

4.1 The misaligned eye: Be sure to pay attention to how well your baby's eyes work together. Strabismus is the term for the detailed condition of the eye, and it is important that it is detected and treated early so vision in both eyes develops properly. Without treatment, this can lead to vision loss or "lazy eyes." Although it takes a few months for the child's eye to develop cooperative eye skills, if you feel a baby's eye is deviation continuously or does not move together with the other eye, contact your pediatrician, your ophthalmologist or medical staff as soon as possible [2][3].

4.2 Retinopathy of prematurity (ROP): A normal pregnancy is about 40 weeks. According to the World Health Organization, babies born before 37 weeks gestation are considered early. Smoking during pregnancy significantly increases the risk of preterm birth. Premature babies are at higher risk for eye problems than full-term babies. ROP is an abnormal tissue in the retina with fibrous tissue and blood vessels. ROP can cause scarring of the retina, poor vision and retinal detachment that can cause blindness. All premature infants have ROP risk. Low birth weight is a risk factor, especially for infants in a high oxygen environment after birth. If your baby is born early, ask your obstetrician to refer you to a child eye specialist so that your baby can have an eye exam to eliminate ROP.

4.3 Nystagmus: This is an uncontrolled movement of both eyes. In most cases, nystagmus causes the eye to drift slowly in one direction and then "jump" back in another. Eye movements of nystagmus are horizontal, vertical, oblique also associated with cross or rotate. Nystagmus may occur at birth, or it may develop weeks to months later. Risk factors include inadequate development of nerves, albinism and congenital cataracts. The magnitude of nystagmus will often determine the sight and visual development of the baby will be affected. If baby with fluttering the eyeball, you consult eye doctor immediately.

4.4 Other problems: Some other congenital eye diseases in this stage are: retinoblastoma with cat eye reflex, cataracts with white pupils, congenital glaucoma with convex eyes, strabismus with the eyes non-coaxial and refractive errors with blurred vision when children grow up [4] [5][6].

Recognizing the importance of developing an infant's vision to develop a whole and a child's life, the American Society of Radiologists sets up the ISEE program in 2005 as a public health program and ensures that eye care and vision are part of the United States' newborn care routine and do not pay for eye examinations.

Conclusion:

Infant and child's visual acuity is a special issue of concern to monitor the normal as well as abnormal development in order to detect and to manage in a timely and effectively. Know the milestones that develop your baby's vision and what you can do to help him or her ensure that they are properly seen and fully enjoying their world.

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Infant and Children's Visual Acuity

Age	Estimated Visual Acuity
< 1 year	1/10
1 year	5/10
2 years old	7/10
3 years old	8/10
4 years old	9/10
5 years old	10/10
6 years old	12/10