



VISUAL ACUITY EXAMINATION IN NEWBORNS

جامعة ساوة

كلية التقنيات الصحية والطبية

قسم تقنيات البصريات

المرحلة الرابعة

الفصل الأول

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GENERAL CONSIDERATIONS

- ❑ Newborn are: from birth to 4 weeks of age (1 month)
- ❑ Early and accurate assessment is vital for detecting amblyopia and pathology
- ❑ Assessment is limited because cortical vision is immature and attention is poor
- ❑ Methods used with older infants may be limited with newborns



GENERAL CONSIDERATIONS



- ❑ Direct, subjective Visual Acuity (VA) measurement is not possible in newborns.
- ❑ assessment of VA in a true newborn is somehow limited to:
 - ❖ observing visual behaviors
 - ❖ Reflexes
 - ❖ Qualitative Checks
 - ❖ Objective quantitative Methods

NEWBORN ASSESSMENT: THE ENVIRONMENT



- ❑ The assessment must begin by preparing the testing environment
- ❑ The room should be dimly lit for the best observation of pupils and fixation
- ❑ Bright light makes fixation difficult and causes the baby to squeeze eyelids shut
- ❑ The baby should be quiet and comfortable for accurate testing
- ❑ Minimize noise and distractions during the examination.

OBSERVING SPONTANEOUS VISUAL BEHAVIOR



- ❑ It is critical to observe spontaneous behaviors before structured testing begins
- ❑ check if the newborn makes eye contact with the parent
- ❑ Note if the baby's gaze wanders excessively, indicating poor fixation control
- ❑ Also, observe for the presence of any nystagmus or ocular misalignment
- ❑ Note if the newborn is getting uncomfortable when covering one of their eyes (objection to occlusion O-to-O test)

NEWBORN ASSESSMENT: VISUAL TARGETS



- ❑ Use age-appropriate visual targets to elicit responses
- ❑ The human face is the most naturally appealing stimulus to newborns especially the mother's face
- ❑ High-contrast targets (black-and-white stripes) are easily seen
- ❑ High contrast is key because their Contrast Sensitivity is very poor.
- ❑ Bright moving objects (penlight, illuminated toy) can also be used
- ❑ Bring the target slowly to 30–40 cm to assess fixation

ASSESSING FIXATION



- ☐ Observe if the newborn briefly fixes gaze on the object or face
- ☐ Look for sustained fixation lasting at least a few seconds
- ☐ Note any signs of asymmetric or absent fixation
- ☐ By a few days, brief fixation to light/face is possible
- ☐ By 4–6 weeks, consistent fixation should be present and reliable.

ASSESSING FOLLOWING (TRACKING)

- ❑ Assess following (tracking) by moving the target horizontally
- ❑ Move the target slowly and silently across the midline
- ❑ Watch for smooth pursuit of the object
- ❑ The newborn may briefly follow the target
- ❑ By 3 months, tracking should be more consistent



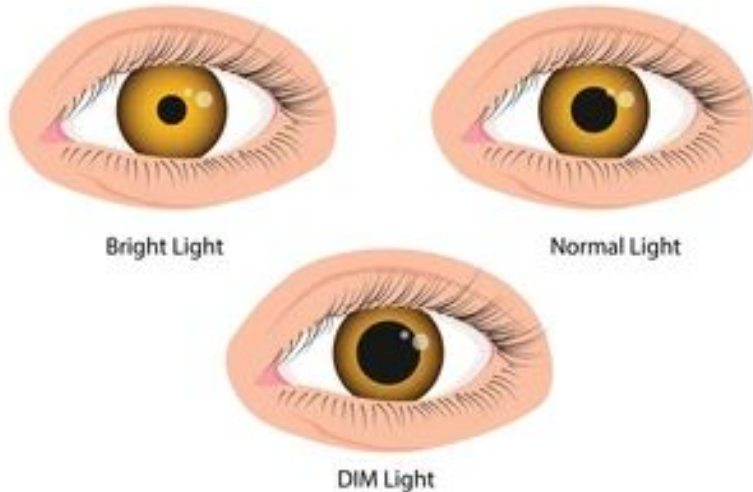
NEWBORN REFLEX: BLINK-TO-LIGHT TEST



- ❑ This test checks the integrity of the light (sense) and motor pathways
- ❑ A bright light source is directed suddenly toward the infant's eyes from the side
- ❑ The expected normal response is a bilateral blink reflex
- ❑ The response may be inconsistent in the first few days of life
- ❑ Absence of the reflex suggests a visual or neurological abnormality.

NEWBORN REFLEX: PUPILLARY LIGHT REFLEX (PLR)

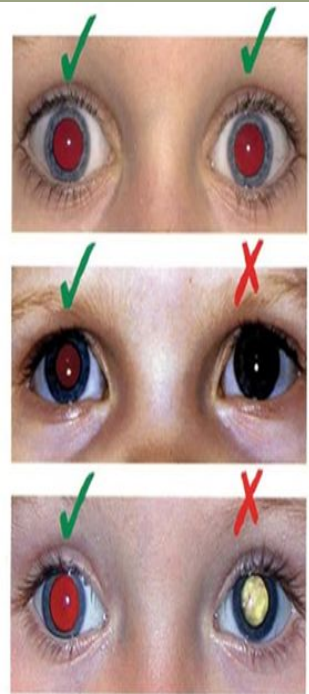
PUPILLARY LIGHT REFLEX



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- ❑ The PLR is an involuntary reflex present at birth
- ❑ Both pupils should constrict symmetrically when light is shone into either eye
- ❑ The response is often slower and less sustained than in older children.
- ❑ Abnormal findings include a slow, weak, or absent reflex
- ❑ Absence of PLR suggests an optic nerve or retinal disease.

THE RED REFLEX TEST (BRÜCKNER'S -TEST)



Normal reflex



No action required

Red reflex absent



See your GP urgently

Red reflex abnormal

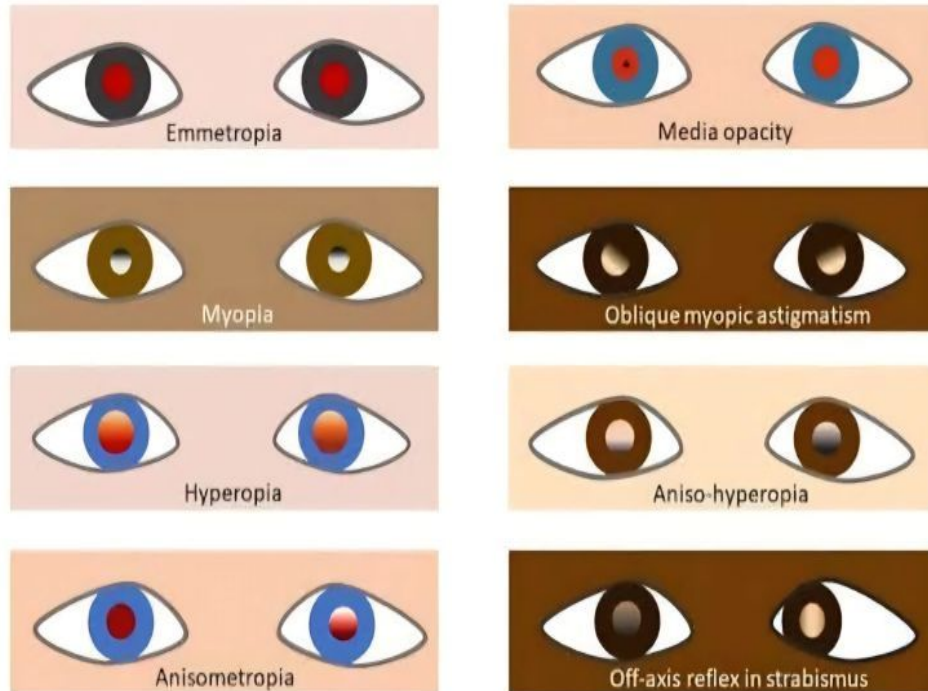


See your GP urgently

- ❑ The Red Reflex is the reddish-orange glow seen when light is shone into the pupil
- ❑ It is caused by the light reflecting off the vascular retina
- ❑ A normal reflex is bright, red/orange, and symmetrical between both eyes.
- ❑ The test should be performed on every newborn

ABNORMAL BRUCKNER'S TEST

Bruckner's Screening



- ❑ An abnormal reflex (dim, white/pale, or asymmetrical) indicates:
 - ❖ Congenital cataract
 - ❖ Retinoblastoma (vision and life-threatening)
 - ❖ Persistent fetal vasculature (PFV)
 - ❖ Strabismus (reflex displaced)
 - ❖ Anisometropia
 - ❖ Refractive errors
 1. Myopia: inferior crescent
 2. Hyperopia: superior crescent
 3. Astigmatism: may be oblique

KEY REFERENCES AND SOURCES

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