Abnormal Head Positions in the Eye Clinic

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Overview

• General considerations
• General categories of head postures
• Non-ocular causes of head postures
• Ocular causes of head postures
• Practical approach to diagnosis & management

General Considerations

• “Torticollis” → Tortus (Twisted) + Collum (Neck)

• Eye conditions leading to AHP → “Ocular Torticollis”

• Caused by muscular, skeletal or neurologic disorders

Torticollis in Children

General Considerations

• Assessment is often multidisciplinary
  – Pediatrician/Generalist
  – Orthopedic surgeon
  – Neurologist
  – Otolaryngologist
  – Physiotherapist
  – Ophthalmologist/Optometrist

• Drivers of “ocular torticollis”
  – To optimize visual acuity
  – To maintain single binocular vision
  – To center a narrowed field with respect to the body

• Our Job: Is this ocular or non-ocular torticollis?
**General Considerations**

- If ocular cause found, treatment can usually eliminate or reduce the problem and restore normal head posture.
- Untreated ocular cause can lead to changes in neck muscles and produce a secondary torticollis, which may persist even if underlying ocular cause is rectified.
- Some head tilts in early childhood can lead to changes in facial bones/facial symmetry.

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**General Categories of AHP**

- Torticollis can involve rotation of the head around any of the 3 main axes

**Face Turn**

- Vertical axis
- Anteroposterior axis of the head
- Face turned to the right

**Chin-up**

- Horizontal axis
- Anteroposterior axis of the head

**Chin-down**

- Horizontal axis
- Anteroposterior axis of the head
Head Tilt

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Non-Ocular Causes

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Ocular Causes - Head Postures

- Step 1 - Help yourself: What is the head position?
  - Face turn
  - Chin-up
  - Chin-down
  - Head tilt
  - Combination of above

Face Turn
Common Causes: Face Turn

- Nystagmus
  - Infantile
  - Acquired
- Incomitant Strabismus
  - Horizontal muscle abnormalities
  - Vertical muscle abnormalities
- Uncorrected refractive error
- Eccentric fixation
- Homonymous hemianopia
- Miscellaneous
  - Monocular blindness, ocular motor apraxia

Right Face-Turn

Common Causes: Chin-up

- Nystagmus
  - Infantile or acquired
- Strabismus
  - Elevation deficits (innervational or mechanical)
  - Pattern Strabismus (‘A pattern’ ET or ‘V pattern’ XT)
- Ptosis
- Uncorrected refractive error
- Supranuclear gaze disorder
- Superior visual field defects

Chin-down
Common Causes: Chin-down

- Nystagmus
  - Infantile or Acquired
- Strabismus
  - Depression deficits (innervational or mechanical causes)
  - Pattern Strabismus ("A pattern" XT or "V pattern" ET)
- Uncorrected Refractive Error
- Supranuclear gaze disorders
- Inferior Visual Field defects

Chin-down

Head Tilt

- Nystagmus
  - Infantile or Acquired
- Strabismus
  - Vertical muscle problems (innervational or mechanical)
  - Cyclotropia
  - Horizontal muscle problems
- Refractive errors

Common Causes: Head Tilt

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Practical Approach

- Is it ocular or non-ocular?
- Remember your “toolbox”
  - Physical features
  - Observe the patient
  - Review old photographs/videos
  - Palpation of neck muscles
  - Occlusion of one eye
  - Visual acuity/refraction
  - Eye movements
  - Measuring head posture
  - Visual fields
  - Fundus exam

Physical Features

- Facial Asymmetry
- Neck Deformities
- Anomalies of trunk or extremities

- These findings suggest either a musculoskeletal cause or a chronic ocular palsy.

Physical Features

- Observing the Patient
  - Is the head position consistent?
  - Does it manifest only under certain conditions
    - Example: Only seen with fixation on fine visual targets
  - If nystagmus is present, observe patient for several minutes
    - Periodic alternation of head posture → Periodic Alternating Nystagmus
  - Head thrust with changes in fixation → oculomotor apraxia

Review Old Photos/Videos

- Documentation from early life confirms chronic nature
- Ask for serial photos from different ages.

Palpation of Neck Muscles

- In musculoskeletal torticollis, neck muscles are tight!
- Passive straightening of head is difficult
- Rare for cases of ocular torticollis to develop extreme neck muscle contracture.
Occlusion of one eye

• If ocular torticollis is to maintain binocularity, then occluding one eye abolishes or reduces the magnitude of the posture

• This testing can be falsely negative if chronic problem has led to “habit” posture in addition to original compensatory head position

• Particularly helpful in children with head tilt

Vision

• Check first in preferred head position
• Then check in forced primary position

Refraction

• Essential part of exam

• Cycloplegic retinoscopy necessary in children

• Trial of spectacles may eliminate head posture

Eye Movements

• Versions & Ductions
• Alternate cover testing
• Nine gaze positions (+tilts)

• Helps identify incomitant strabismus or nystagmus null zone

• Special attention to position opposite that of the preferred abnormal orientation.

Measuring the Head Posture

• In addition to documenting the orientation of the posture, estimate the angle.

• This may assist in documenting change over time.
Visual Fields

- Automated perimetry or Confrontation Visual Fields
- Looking for Hemifield or Altitudinal defect

Fundus Examination

- Evaluate for abnormalities
  - Retinal traction?
  - Fundus Pathology?
- Evaluate for low-amplitude nystagmus
- Evaluate for cyclotropia

Summary

- First, help yourself: Determine type of head posture
- Second, use your “toolbox” to narrow differential
- Communicate the information to your doctor. They, and the patient will be grateful.

References