Chiasmal Disorders – Common and Uncommon Presentations

Grant T. Liu, MD
Neuro-ophthalmology Service, Children’s Hospital of Philadelphia (CHOP), Hospital of the University of Pennsylvania, Scheie Eye Institute
Nothing to disclose
Chiasm: Visual symptoms

- Insidious visual loss
- “Blurry” peripheral vision
- Loss of central acuity
- Strabismus/Nystagmus
- “Difficulty with depth perception
- Sensory “double” vision - hemifield slide
Chiasm: Visual symptoms

- Insidious visual loss
- “Blurry” peripheral vision
- Loss of central acuity
- Strabismus/Nystagmus
- “Difficulty with depth perception
- Sensory “double” vision - hemifield slide
Chiasm: Visual symptoms

- Insidious visual loss
- "Blurry" peripheral vision
- Loss of central acuity
- Strabismus/Nystagmus
- "Difficulty with depth perception"
- Sensory "double" vision - hemifield slide
<table>
<thead>
<tr>
<th>Location</th>
<th>Field Defect</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Right Optic Nerve</td>
<td>![Field Defect Icon]</td>
<td>No light perception in the right eye</td>
</tr>
<tr>
<td>2. Junction of Right Optic Nerve and Chiasm</td>
<td>![Field Defect Icons]</td>
<td>Junctional syndrome</td>
</tr>
<tr>
<td>3. Chiasm</td>
<td>![Field Defect Icons]</td>
<td>Bitemporal hemianopsia</td>
</tr>
<tr>
<td>4. Posterior Chiasm</td>
<td>![Field Defect Icons]</td>
<td>Central bitemporal hemianopic scotomas</td>
</tr>
<tr>
<td>5. Left Optic Tract</td>
<td>![Field Defect Icons]</td>
<td>Incongruous right homonymous hemianopsia</td>
</tr>
</tbody>
</table>
Upper Bitemporal Hemianopia

Left eye

Right eye
Lower Bitemporal Hemianopia

Left eye

Right eye
Junctional Scotoma

Left Eye

Right Eye
Arcuate Bitemporal Hemianopia

Left eye

Right eye
Arcuate Bitemporal Hemianopia

Left eye

Right eye
Central Bitemporal Hemianopia

Left eye

Right eye
Post-fixation Blindness

Overlapping blind fields

Defective temporal field of left eye

Defective temporal field of right eye

T

M M
Sensory Double Vision - Hemifield Slide
Sensory Double Vision - Hemifield Slide

Pattern of misalignment:

Nasal fields as the patient views three numbered circles:

Patient interprets as:

Exotropia: 1 2 2 3

Esotropia: 1 3
Chiasm: Eye Findings

- Visual Acuity
- Color Vision
- Pupils
- Fundus
  - no optic disc pallor
  - patterns of optic disc pallor
  - papilledema
Chiasm: Eye Movement Disorders

- Cavernous Sinus involvement
- Heimann-Bielchowsky phenomena
- See-saw nystagmus
- Asymmetric nystagmus
- Spasmus Nutans
Spasmus Nutans/Brain Tumors

- Triad of nystagmus, head nodding and head tilt
- Disorder of infancy and early childhood (onset 4-18 months, disappearing by 3 years of age)
- Benign
Spasmus Nutans/Brain Tumors


- 10 infants in whom acquired nystagmus was the initial sign of a chiasmal/parachiasmal glioma

- Nystagmus was pendular, asymmetric, and difficult to distinguish from that of spasmus nutans
Sellar Lesions – Chiasmal Syndromes

Mass Lesions
Cysts
Infectious dysplasia
Demyelination
Vascular disorders

Inflammatory
Radiation
Chiasmal
Trauma
Metastases
Pituitary Adenoma
Pituitary Adenoma - Pre-op. HVF
Pituitary Adenoma - Post-op. HVF

Left eye

Right eye
Pituitary Apoplexy
Traumatic Chiasmal Syndrome

- Bitemporal hemianopsia
- Diabetes insipidus, anosmia, and other cranial neuropathies
- Base of skull injury
- Stretching, vascular insult, hemorrhage, contusion necrosis, contusion tears all proposed etiologies
Traumatic Chiasmal Syndrome
Traumatic Chiasmal Syndrome
Traumatic Chiasmal Syndrome
Traumatic Chiasmal Syndrome