Visual Fields.

Jorge L. Fernandez-Bahamonde, MD.
Basics: Definitions.

- **Isopter.**
  - Inside this area a particular target is recognized.

- **Scotoma.**
  - Focal area of decrease perception surrounded by a more sensitive area.
    - Absolute. Retinoschisis.
    - Relative. Retinal detachment.

- **Depression.**
  - Area of decrease sensitivity without a normal surround.
Borders.

- Sharp.
  - Size remains constant regardless of the test object.
    - Vascular, infarctions.
    - Retinoschisis.

Sloping.

- The smaller the test object, the larger the defect.
  - Tumors.
  - R/D.
Basics: Scotomas

- **Hemianopsia.**
  - Loss in a half-field.
    - Complete. Indicate affected side only.
    - Partial.
    - Quadrantic.

- **Congruous.**
  - Similar, measured in central field.
    - Posterior pathway.

- **Incongruous.**
  - Grossly dissimilar.
    - Anterior pathway.
Basics: Color Testing.

- Controversial.
- Optic nerve involvement.
  - Check for decrease red sensitivity.
  - Fails HRR.
- Retina involvement.
  - Rod disease: check for blue sensitivity.
  - Cone disease: loss of reds.
    - Plaquenil.
Type of VF defects.

- Monocular.
  - Localized.
    - NFBD.
  - Generalized.

- Binocular.
  - Hemianopsia.
  - Quadrantopsia.

- Junctional.
Differential Diagnosis.

- NFBD.
  - Retinal fibers or disk origin.
    - Respect horizontal.
    - Defect connects to blind spot.
      - Glaucoma like.
  - Posterior to nerve head.
    - Neuro like.
      - Respect vertical.
      - Connects to fixation.
Types of Perimetry.

- **Kinetic.**
  - Moving target, constant intensity.
  - OK in neuro, not good in flat defects.
  - Tech-dependent.
    - Goldmann.

- **Static.**
  - Variable intensity.
    - Stationary object.
  - Excellent in glaucoma.
  - Tech-independent.
    - CAP. Humphrey, Octopus.
Kinetic vs CAP.

- Source of light
- Target intensity & size
- Printout
CAP. Octopus vs Humphrey.

- **Apostilbs.**
  - Brightness over area.
    - \( 0.318 \text{ candela/m}^2 \).

- **Decibels.**
  - Arbitrary scale of retinal sensitivity.
  - Relationship size:brightness.
    - \( I \approx II \approx III \approx IV \approx Ie \)
    - Jumps in area 4x
    - Jumps in decibels.
      - Numbers: 5 db
      - Letters: 1 db.
Anatomy of the visual pathways: Retina.

- Retina & the VF.
  - Fovea divides the retina (fovea=fixation).
  - Optics of the eye reverse the image.
    - Temporal retina: nasal field.
    - Inferior retina: superior field.
- Expected range:
  - Superior 50°.
  - Inferior 70°.
  - Nasal 60°.
  - Temporal 90°.
Retina.

- Retinal fibers.
  - Fibers from the retina temporal to the fovea.
    - Arcuate route around the fovea.
      - Arcuate defects.
      - Correspond to the nasal field.
      - Stop at the horizontal raphe.
        - Nasal step.
      - Enters at the upper and lower poles of the optic nerve.
        - Most susceptible areas in glaucoma.
Retina

Retinal fibers.

- Fibers from the retina nasal to the fovea.
  - Radial course toward the optic nerve head.
  - Less susceptible in glaucoma than the arcuate.
    - Temporal wedge.

Macular fibers.

- Direct approach: papillomacular bundle.
- Most resistant to glaucoma damage.
Retina: Fibers orientation.
Fibers orientation lead to types of NFBD:
Temporal Wedge, Paracentral, Arcuate, Nasal Steps.
Monocular localized: Temporal Wedge

- Lesion in the nasal retina.
  - Vascular.
  - Retinoschisis.
- Optic nerve head.
  - Glaucoma.
  - ION.
  - Drusen.
- Retrobulbar (first cm).

Scotoma or depression, points toward Blind spot.
Monocular localized: Arcuate defects.

- Pericentral.
  - Within 5° of fixation.
- Bjerrum region.
  - 10-20° of fixation.
- DD.
  - Glaucoma.
  - ION.
  - Myopia.
  - Congenital.
  - Retrobulbar (initial cm).
Monocular localized: Arcuate defects.

- Bjerrum stages.
  - Isolated.
  - Arcuate.
  - Altitudinal.
    - Superior think glaucoma.
    - Inferior r/o ION.
- Breaking into a nasal step.
Monocular localized: Arcuate defects & Nasal steps.

- Nasal step.
  - Discontinuity or depression along the horizontal raphe.
    - 10° one isopter.
    - 5° two isopters.
  - May combine with.
    - Bjerrum.
    - Paracentral.
- Glaucoma.
NFBD: Optic n. changes & NFBD.
NFBD: Cecocentral.

- Central region & blind spot.
- DD.
  - Optic pit with serous detachment.
  - Toxic or nutrional amblyopia.
  - AMD, CSME, CME.
  - Cilioretinal artery occlusion.
NFBD: Central.
Optic Nerve Swelling.
Anatomy of the visual pathways: Optic Nerve.