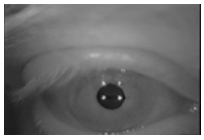
ENG in Central Vertigo

ENG findings in Central Vertigo

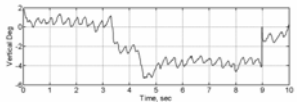
- Spontaneous and Fixation
- Gaze evoked and Rebound
- Pursuit
- Saccades
  - INO, Slow
  - Dysmetria
  - Opsoclonus
- Central Positional Nystagmus

ENG: Spontaneus: Pendular

- **Spontaneous**
- Fixation

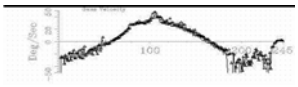


Patient with oculopalatal myoclonus. MS and CN other reasonable possibilities.



ENG: Spontaneous: PAN

- **Spontaneus**
- Fixation



Congenital and acquired forms. Acquired form usually from cerebellar nodulus lesion. Usual period is 200 sec. Easily missed on ENG which can cause great confusion.

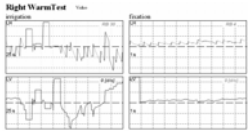
Spontaneous up, dn or torsional is usually central

- Spontaneous
- **Fixation**
  - Can't record torsion nystagmus, but it is always central if present upright.
  - Small degrees of ubn or dbn are usually innocuous

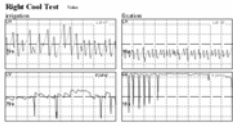
Fixation suppression: Peripheral

- Spontaneous
- **Fixation**

Good fixation suppression of caloric



Patient is trying (excursion goes down) but it isn't working.



Fixation suppression – other comments

- There are many pitfalls to caloric fixation – rotatory chair is more reliable. This greatly limits it's utility.
  - Choice of place in caloric to fixate
  - How hard is patient trying ?
  - Choice of place in trace to analyze

Fixation suppression

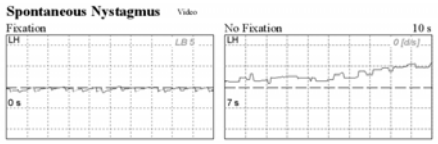
- Spontaneous
- **Fixation**

- Good or bad in central vertigo – just depends what brain structure is affected. Bad suggests central. Good doesn't help.
- There are many pitfalls to "Bad" caloric fixation. This greatly limits it's utility.
  - Choice of place in caloric to fixate
  - How hard is patient trying ?
  - Choice of place in trace to analyze

Fixation suppression: CN

- Spontaneous
- **Fixation**

- Fixation increases nystagmus in most CN

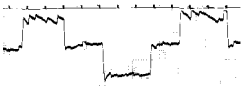


ENG – Gaze -- GEN

- **Gaze evoked**
- Rebound

You can usually see GEN on saccade test. GEN is most commonly due to medication (such as anticonvulsants). Also sedatives. There is no rebound in drug induced GEN

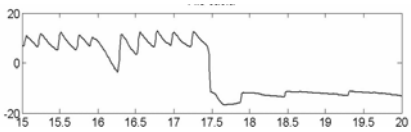
Occasionally GEN is due to cerebellar disorders.



ENG – Gaze -- CN

- **Gaze evoked**
- Rebound

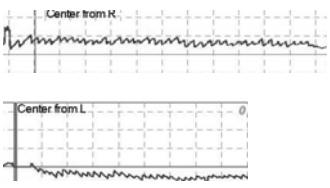
CN typically has strong GEN, but usually it is asymmetrical with a "null" off-center.



ENG – Gaze -- Rebound

- Gaze evoked
- **Rebound**

Rebound is easily seen on ENG. You may have to configure a special protocol however. Rebound is specific for central disorders.



ENG: Central Pursuit

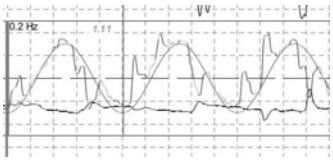
- Poor Pursuit
- Not trying
- Can't see
- CN

- Poor pursuit – drugs, central
- Not trying
- Blind people don't pursue very well
- CN pursuit: Too fast pursuit with "backup" saccades – typical of Latent Nystagmus and other types of CN.

ENG: Cerebellar pursuit

- Poor Pursuit
- Not trying
- Can't see
- CN

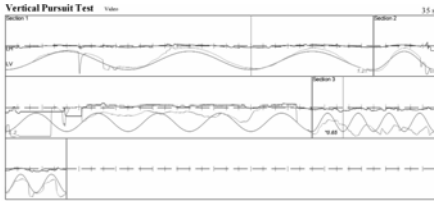
- Poor pursuit – drugs, central



ENG: Central Pursuit

- Poor Pursuit
- Not trying
- Can't see
- CN

- Not trying (malingering below)



ENG: Central Pursuit

- Poor Pursuit
- Not trying
- Can't see
- CN

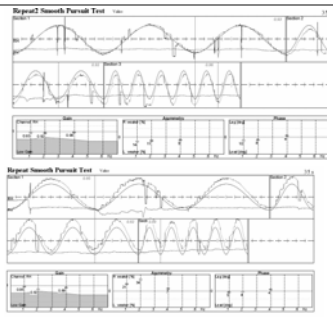
- Blind people don't pursue very well if at all.
  - Removed spectacles
  - Cataracts
  - Glaucoma
  - Macular Degeneration

ENG: Central Pursuit:CN

- Poor Pursuit
- Not trying
- Can't see
- **CN**

Asymmetrical pursuit in LN.

Changes direction according to viewing eye.



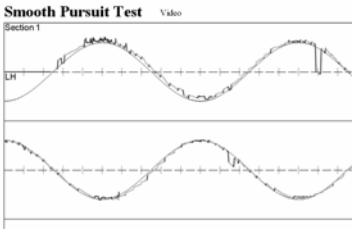
LEV

REV

ENG: Central Pursuit:CN

- Poor Pursuit
- Not trying
- Can't see
- **CN**

Backup saccades in LN

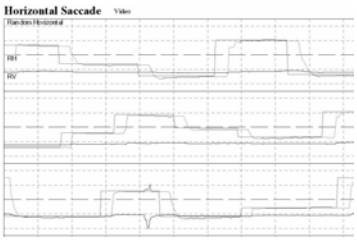


ENG: Saccades

- INO or BINO
- Slow
- Dysmetric
- Opsoclonus

INO – patient with MS

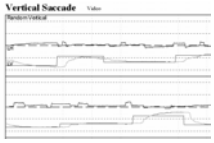
- **INO or BINO**
- **Slow**
- Dysmetric
- Opsoclonus

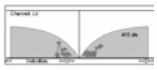


Slow saccades

- INO or BINO
- **Slow**
- Dysmetric
- Opsoclonus

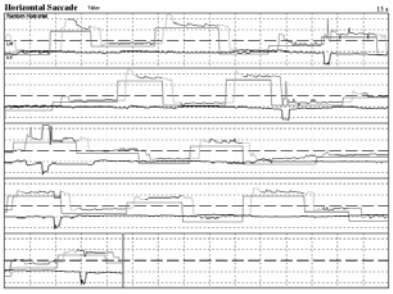
Slow vertical saccades are usually due to PSP or calibration error. You can easily tell the difference by checking to see if the eye is tracking the target.





Dysmetric Saccades – patient with cerebellar degeneration

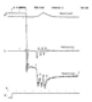
- INO or BINO
- Slow
- **Dysmetric**
- Opsoclonus



Opsoclonus – patient with post-infectious syndrome

- INO or BINO
- Dysmetric
- **Opsoclonus**

- Opsoclonus can't be seen on VENG
- Blink algorithms cut it out
- It is an "eyeball" diagnosis.



ENG: central: positional

- It's not BPPV – no burst of UB/Torsion or lateral canal pattern
- Never stops
- Unusual vectors –
  - Purely vertical
  - Purely horizontal
  - Purely torsional

Central Positional

- Be cautious in calling a central positional
- Most positional nystagmus, no matter how bizarre it is, is BPPV
- If there are several strong central findings, maybe.

Summary – this is the hard part to ENG interpretation

- Central vertigo is uncommon but very complex, and often a dangerous problem.
- Nearly any neurological condition may cause central vertigo
- ENG interpretation of central vertigo is very complex.