

NYSTAGMUS 3



Nystagmus

- Defect in slow phase.
- Nystagmoid movement : no slow phase.
- Important to distinguish jerk from pendular nystagmus.

Jerk Nystagmus

- Childhood : latent nystagmus
- Any Age : vestibular , gaze-evoked , dissociated , upbeat , downbeat , see-saw

Pendular nystagmus

- Childhood : spasmus nutans
- Any age : Oculopalatal myoclonus , see-saw

Nystagmus

- Define by direction of fast-phase

Symptoms

- Oscillopsia
- Nausea and vomiting (vestibular)
- Diplopia , facial numbness (brain stem)
- Hearing loss , tinnitus (vestibular)

Examination

- Straight head
- Tests saccades and pursuits
- Test VOR (head rotation when looking at target)
- test VOR cancellation (cerebellar or vestibular disease)
- Direct ophthalmoscope (subtle nystagmus)

Examination

- Dix-Hall pike maneuver (BPV)
- OKN drum (congenital nystagmus - reversal of OKN)
- Caloric stimulation (COWS)

Pathophysiology

- Defect in slow movement.
- Slow eye movement system (visual fixation, vestibular system , smooth pursuit, vergence , neural integrator)
- Vestibular injury (Peripheral-input and output to semicircular canals , central - cerebello-vestibular pathway).

Clinical Approach (DWARF)

- Direction - horizontal , vertical , rotational
- Waveform - Pendulr , Jerk
- Amplitude - large, small
- Rest - present in primary position ?
- Frequency - fast,slow

Clinical Approach

- Monocular or binocular
- Conjugate
- Continuous or provoked by a particular eye position.
- Null-point

Infantile Nystagmus

- First few months-years of life
- Strabismus (15%)
- Must rule out damage to the visual pathway (optic atrophy, ocular albinism, achromatopsia, LHON , aniridia)

Infantile (Congenital) Nystagmus

- Conjugate , rarely rotary or vertical
- Jerk or Pendular
- Null point
- Decrease with convergence
- Increases with fixation
- Reversal of OKN

Latent Nystagmus

- Covering one eye.
- Conjugate jerk
- Strabismus (Congenital ET)
- Abnormal Streopsis
- Fast phase towards to uncovered eye.
- Manifest Latent nystagmus (due to reduced acuity in one eye and interruption of binocularity-suppression).

Infantile Nystagmus

QuickTime™ and a
h264 decompressor
are needed to see this picture.

Spasmus Nutans

- Torticollis with head nodding
- Pendular , horizontal , vertical or rotary
- Age 4-14 months
- Can last unto 1-2 years
- Usually resolve by 5 years
- Parasellar and hypothalamic glioma

Spasmus Nutans

QuickTime™ and a
decompressor
are needed to see this picture.

Heimann-Bielschowsky

- Rare type of nystagmus
- Mono-ocular nystagmus in an eye with long-standing poor vision
- If vertical nystagmus and RAPD must rule out visual pathway glioma.

Vestibular Nystagmus

- Dysfunction in peripheral or central vestibular pathways.
- Alexander's rule
- Peripheral : Labyrinthitis , vestibular neuritis , BPV

Peripheral Vestibular Nystagmus

- Sudden onset
- Nausea , vertigo
- Oscillopsia, tinnitus , hearing loss.
- End-organ disease
- Produce ipsilateral “bias” and a corrective saccade towards contralateral side.

Peripheral Vestibular Nystagmus

- Disrupts output from all 3 semicircular canals.
(mixed horizontal-rotary) nystagmus.
- Alexander's rule.
- Visual fixation will dampens the nystagmus.

Central Vestibular Nystagmus

- Brain stem connections with cerebellum (flocculus, modulus , uvula)
- Some types are localizing.

Downbeat Nystagmus

- Upward drift with corrective downward saccade.
- Lesions of vestibulocerebellum (nodulus, uvula, flocculus, paraflocculus)
- Decreased input from anterior semicircular canals.
- Structural lesion at cervicomedullary junction (Chiari type 1)
- Anti-GAD in unexplained downbeat nystagmus.

Arnold Chiari type 1



Downbeat Nystagmus

ARNDT

Anti-GAD downbeat nystagmus

Downbeat Nystagmus

- Arnold-Chiari type 1
- Tumors of foramen magnum
- MS
- Stroke
- Drugs (Lithium, anti epileptics)
- Spinocerebellar degeneration
- Paraneoplastic

Treatment of Downbeat Nystagmus

- Clonazepam
- Baclofen
- Gabapentin
- Memantine
- 4-Aminopyridine
- 3-4 diaminopyridine

Upbeat nystagmus

- Downward drift followed by a corrective upward saccade.
- Brain stem or anterior cerebellar vermis.
- MS , stroke, spinocerebellar degeneration.

Torsional Nystagmus

- Pure torsional nystagmus is central. (medulla)

Periodic Alternating Nystagmus

- Horizontal
- Congenital
- Acquired (cycle of 2-4 min)
- Must wait to see it !
- Dysfunction in cerebellar nodulus and uvula.
- MS , Cerebellar degeneration, Chiari, Drugs.

PAN

QuickTime™ and a
Photo - JPEG decompressor
are needed to see this picture.

Acquired Pendular Nystagmus

- Slow phase in horizontal , vertical and torsional planes.
- Poor localising value.
- Common in MS patients.

Oculopalatal Myoclonus

- Acquired oscillations of the eye and palate.
- Usually conjugate and vertical.
- Eye movements with synchronous facial , pharynx, tongue and larynx movements.
- Several months following a stroke involving Guillar-Mollaret triangle
- Olivary hypertrophy seen in MRI T2 high signal

Ocular Flutter

- No inter-saccadic interval
- Bursts of small amplitude , high frequency horizontal movements (10-15 Hz).

Opsoclonus

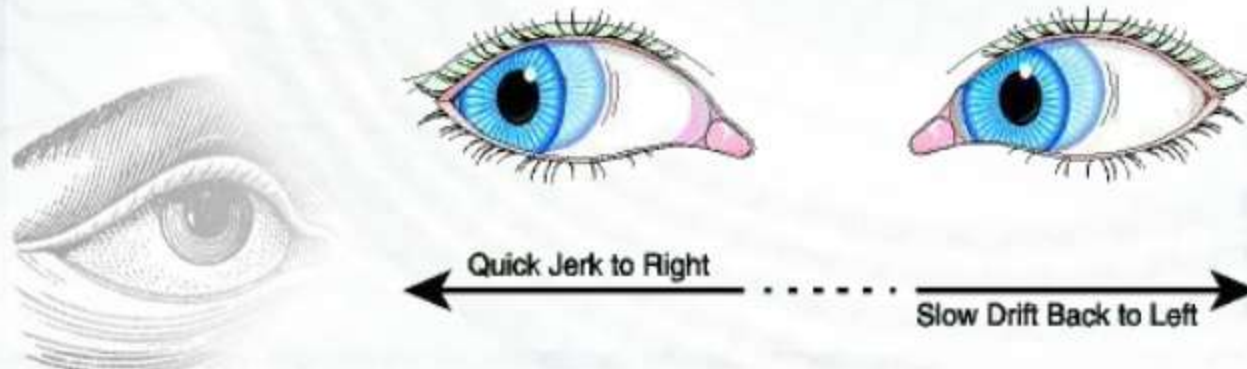
- Multidirectional eye movements high frequency movements.
- Paraneoplastic etiology in both flutter and opsoclonus.
- Children- Neuroblastoma
- Adults - Small cell Lung Carcinoma, ovarian or breast cancer.
- Serum or CSF - IgG anti-neuronal nuclear antibody (ANNA2 or anti Ri) in breast or ovarian cancer.
- ANNA-1 , Anti-Hu - for neuroblastoma.
- Opsoclonus-myoclonus syndrome.

Eye Movements in Comatose Patients

- Conjugate ocular deviation.
- Spontaneous slow, roving, horizontal eye movements.
- Periodic alternating gaze deviation (metabolic coma).
- Ocular bobbing : rapid downward eye movement followed by slow upward return in pontine lesions.

Contents:

- Different types of Nystagmus
- When To Seek Doctor's Help?
- Treating Nystagmus
- Conclusion



Different types of Nystagmus:

The different types of **Nystagmus** are:

- Manifest
- Congenital
- Manifest-latent
- Acquired and latent



“Out of these congenital and acquired are the ones that are to be treated as most risky ones.”

Terminologies

- Amplitude
- Frequency
- Intensity
- Null zone
- Pursuit / Saccade
- Conjugate / Dissociated
- Jerk / Pendular

Amplitude

- Amplitude is the excursion of the nystagmus and described as
- Fine : less than 5°
- Moderate: 5° - 15°
- Large greater than 15°

Frequency

- Frequency is the number of to and fro movements in one second
- Described as cycles/sec or Hertz (Hz)
- Slow : (1-2 Hz)
- Medium : (3-4 Hz)
- Fast: (5 Hz or more)

Intensity

- Intensity = amplitude * frequency
- Null zone: position where nystagmus is minimised
- Patient assumes a head posture, such that the eyes are in null zone

Pursuit /Saccade

- Pursuit eye movements allow the eyes to closely follow a moving object.
- Pursuit differs from the vestibulo-ocular reflex, which only occurs during movements of the head and serves to stabilize gaze on a stationary object
- Saccades are quick, simultaneous movements of both eyes in the same direction

Conjugate/Dissociated

- Conjugate : nystagmus which is symmetric in direction, amplitude and rate
- Dissociated: when it differs in any one of the parameters between two eyes