168-6
Downbeat Nystagmus PAN
Eye Movements

No nystagmus initially in primary gaze

A period of downbeat nystagmus in central gaze

A period of periodic alternating nystagmus

No nystagmus on upgaze.
Pathogenesis

Periodic alternating nystagmus is due to a lesion of the cerebellar nodulus and uvula.
Clinical Features of Acquired Periodic Alternating Nystagmus

- Horizontal nystagmus, reverses direction approximately every 90–120 seconds
- May be associated with periodic alternating head turns – the head turns in the direction of the quick phase, and the eyes are moved into a position in the orbit that is the same as the direction of the slow phase – so minimizing the nystagmus by Alexander’s law
- Nystagmus cycle is usually little affected by visual fixation
- Vestibular stimuli, such as head rotations, can change or transiently stop nystagmus
- Downbeat nystagmus and square wave jerks may become more obvious in the brief null period when the horizontal nystagmus wanes and then reverses

For pathophysiology, see: Effects of Vestibulocerebellar Lesions on the VOR, in Chapter 2. For etiologies, see Table 10-4. (Related Video Display: Periodic Alternating Nystagmus)
Acquired PAN

Box 10–4. Clinical Features of Torsional Nystagmus

- Torsional jerk nystagmus (minimal vertical or horizontal components) present with eye close to central position
- Slow phases may have linear-, increasing-, or decreasing-velocity waveforms
- Poorly suppressed by visual fixation of a distant target
- Exacerbated by changes in head position or vigorous head shaking
- May be suppressed by convergence
- Often occurs in association with ocular tilt reaction or unilateral internuclear ophthalmoplegia
- May be precipitated or modulated by vertical smooth pursuit movements

See also: Pathogenesis of Central Vestibular Nystagmus, in Chapter 10. For etiologies, see Table 10-3.
(Related Video Display: Downbeat nystagmus, Upbeat, Torsional Nystagmus)
Acquired PAN

Arnold Chiari malformation
Ataxia telangiectasia
Cerebellar degeneration
Creutzfeldt-Jakob disease
Acquired PAN

Hepatic encephalopathy
Lithium toxicity
Multiple Sclerosis
Spinocerebellar ataxia
Following visual loss
Periodic Downbeat Nystagmus

The authors observed a periodic downbeat nystagmus with a cycle of 3 minutes 30 seconds, beating downward for a period of 90 seconds every 2 minutes. It lasted 86 hours in a patient with severe hypomagnesemia associated with complications from scleroderma.

There was no lesion on brain imaging, and an EEG performed during the nystagmus was normal, indicating that the most likely explanation for this periodic nystagmus is metabolic.

This form of nystagmus may have resulted from severe hypomagnesemia, possibly associated with thiamin deficiency.

References


http://www.library.med.utah.edu/NOVEL