Positional Nystagmus as a Reliable Diagnostic Tool For Different Vestibular Lesions

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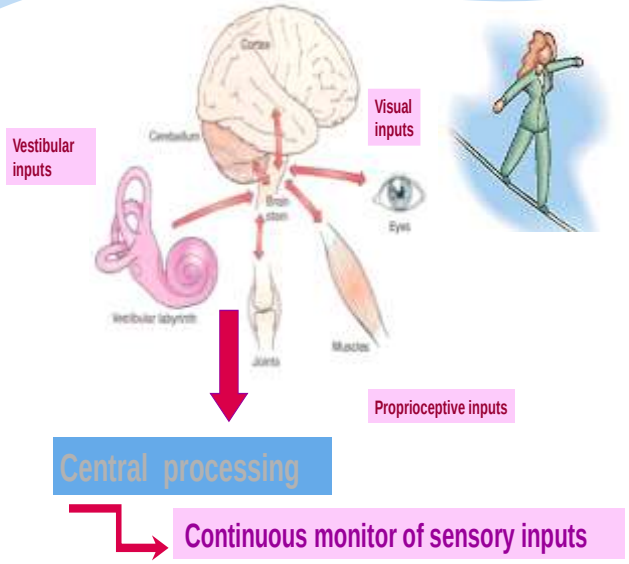
Definition

Positional nystagmus testing is used to determine if a change of position of the patient's vestibular systems in space provokes nystagmus.

Central and peripheral vestibular lesions can cause positional nystagmus and vertigo, and the examination focuses on distinguishing between them.

Balance Control Systems



The Balance System

Three sensors:

vision- proprioception - vestibular organ

Three centers:

Brainstem- cerebellum – vestibular cortex

Two executive systems:

Occulomotor muscles – musculoskeletal system

Outlines

What is positional nystagmus testing?

Positional nystagmus testing determines whether a change of position of the patient's vestibular systems in space provokes nystagmus.

Considerations

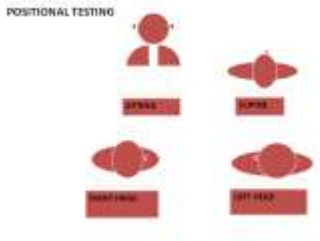
- Positional nystagmus is created by an asymmetry in the tonic resting rate of the two vestibular end organs.
- It is critical to identify the presence of spontaneous nystagmus prior to positional testing.
- Positional testing is performed vision-denied (using covered VNG goggles) so that the patient does not have the means to suppress nystagmus.

Considerations

- If the patient becomes strongly reactive when they are moved from one position to another, it is usually indicative of a vestibular lesion in the ear that is downward.
- If, within 15 seconds, no nystagmus is noted in the tracing, it is not necessary to continue the test. However, if nystagmus is noted, it is helpful to continue the recording for at least 30 seconds to watch for decay.
- Positional testing is also used in the diagnosis of benign paroxysmal positional vertigo (BPPV) of the lateral canal.

Description

- Positional testing is all about maintaining a certain head position with respect to gravity. As it is the head position and not the movement that we are interested in, the movements to each position should be slow and the head position sustained for a time.



Some nystagmus is only evident with changes in head position with respect to gravity.

Both central and peripheral vestibular lesions can cause positional nystagmus and vertigo.

Our examination focuses on distinguishing the two

Observations of:

Direction

Latency

Fatigability of nystagmus

Ability to suppress nystagmus with vision

Are important diagnostically

Horizontal, vertical or torsional nystagmus could be central, peripheral or Benign paroxysmal

To differentiate:

Directional changing or directional fixed with changing head position

Effect of visual fixation (suppressed with visual fixation or not)

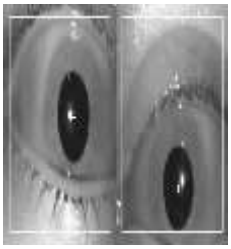
Fatigability

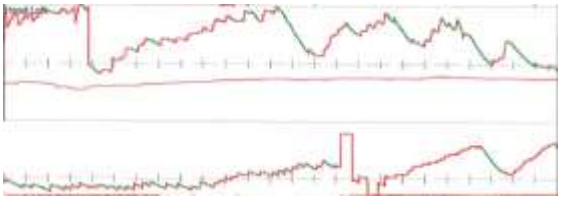
Latency

Clinical cases

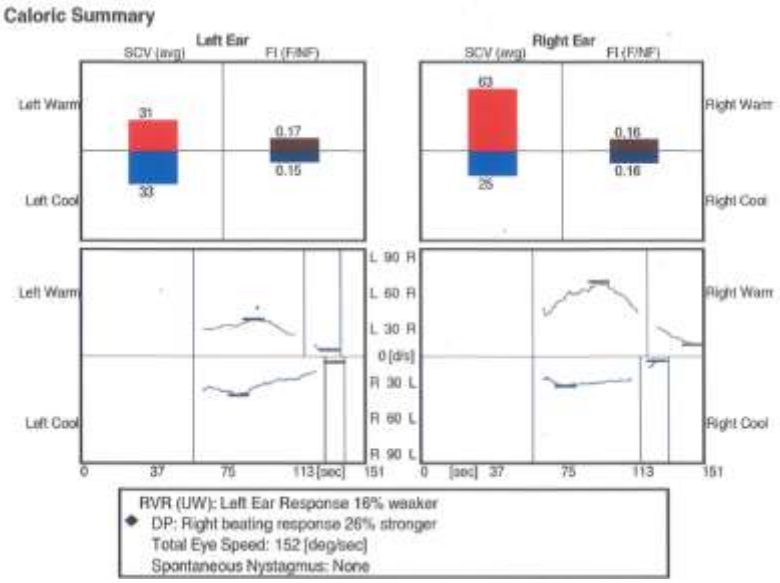
54 years old female. History of dizziness of about 2 years duration. Resolved, then back again one week duration. SRS, spontaneous, lasts for minutes and associated with nausea.

Bilateral normal hearing sensitivity.



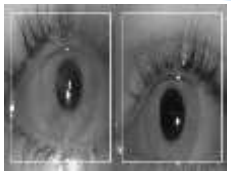


Positional nystagmus of Decompensated peripheral vestibular lesion

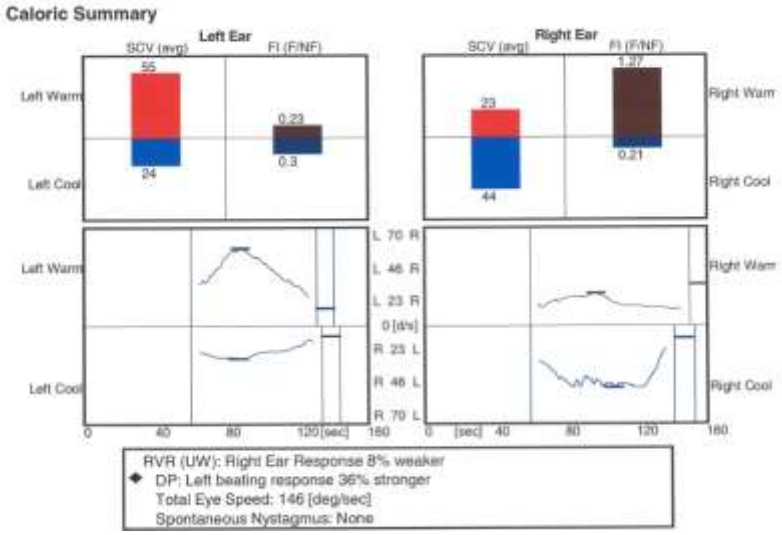


17 years old male. History of dizziness of about 10 years duration. Never resolved, frequent spontaneous SRS, lasts for minutes and associated with nausea sometimes vomiting.

Bilateral normal hearing sensitivity.

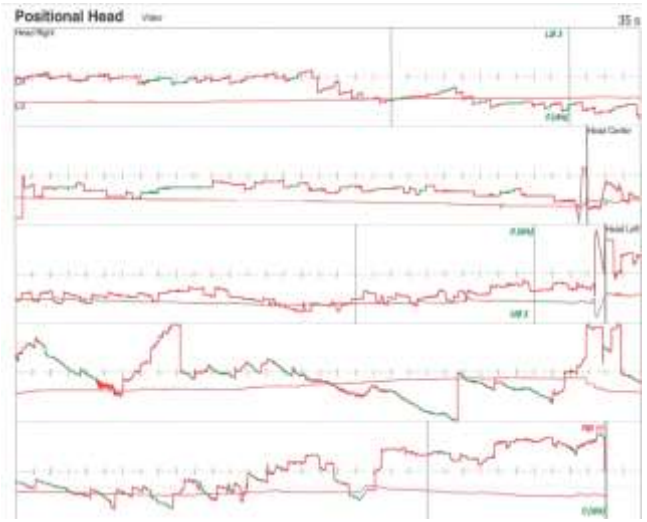


Uncompensated Peripheral vestibular lesion



44 years old male. History of dizziness of about 4years duration. Never resolved, frequent spontaneous SRS, lasts for minutes and not associated with nausea sometimes vomiting.

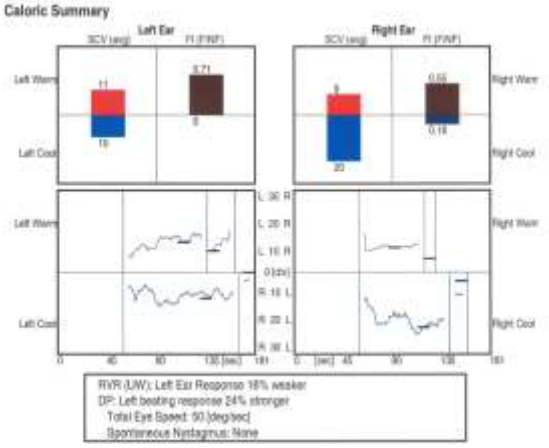
Left severe high frequency sloping SNHL.



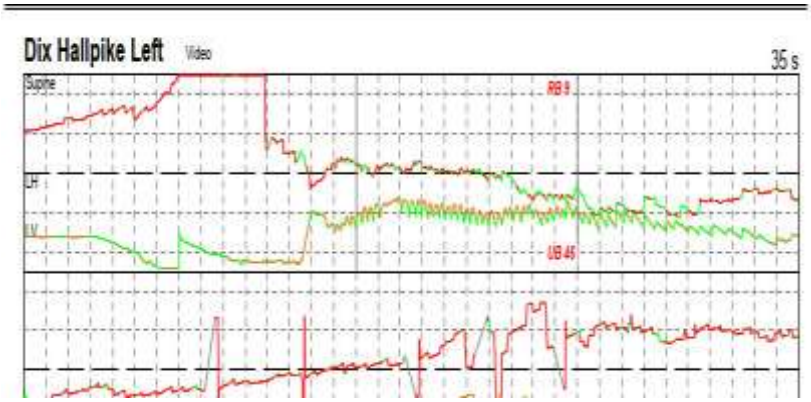
MRI Showed brain lesion

Head Right

Head Left



Posterior Canal BPPV



Take home messages

- You can use positional nystagmus testing to determine if a change of position of the patient's head provokes nystagmus.
- Central and peripheral vestibular lesions can cause positional nystagmus and vertigo, and the examination focuses on distinguishing between them.
- Latency, fatigability, directionality and effect of visual fixation are our tools to differentiate.
- Positional nystagmus along with history and directional preponderance will help for proper diagnosis and rehabilitation plan accordingly.

References

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Thank You!