Guidelines on vertigo and dizziness

1. Patient history

1.1. *Vertigo or dizziness*

- Description (rotatory vertigo, horizontal or vertical linear sensations, postural imbalance)
- Start, duration, frequency
- Provocative event (e.g. position, orthostatism, spontaneous, Valsalva, Tullio)
- Initial manifestations
- Autonomic symptoms
- Gait: quality and perturbation factors
- Direction of body tilt or imbalance (lateral, posterior)
- Falls: circumstances (current occupations, situation)

1.1.1. Visual influence

- Mobile environment intolerance
- Acrophobia

1.1.2. Agoraphobia, Anxiety (HAD and PHQ scale in annex)

1.1.3. Effect on life quality evaluation (DHI scale in annex)

1.2. *Otological symptoms* (for each symptom, check laterality and temporality with vertigo)

1.2.1. Hypoacousia or hyperacousia, fluctuating hearing, diplacousia, distorsion

1.2.2. Tinnitus: continuous, pulsating, positional

1.2.3. Hearing fullness or pressure

1.2.4. Otalgia

1.2.5. Otorrhea

1.3. *Visual manifestations*

1.3.1. Amaurosis

1.3.2. Horizontal or vertical diplopia

1.3.3. Oscillosia

1.3.4. Visual field inversion

1.3.5. Refraction correction related

1.4. *Neurological manifestations* (precise temporality with vertigo)

1.4.1. Migraines, headache and facial pain

1.4.2. Sensitive and motors manifestations (e.g. precision in movement of upper limbs)

1.4.3. Symptoms related to other cranial nerve disorders

1.4.4. Symptoms related to cervical spine disorders (e.g. cervicalgia)

1.5. *Prior history*

1.5.1. Hereditary (according to current pathology study)

1.5.2. ENT

1.5.3. Neurological

1.5.4. Traumatic

1.5.5. Cardiovascular and vascular risk factors (hypertension, diabetes, cholesterol, smoking)

1.5.6. Metabolic and hormonal

1.5.7. Infectious

1.5.8. Immunological

1.5.9. Locomotor (rheumatological, orthopedic)

1.5.10. Strabismus, amblyopia, multifocal refracted lenses

1.5.11. Gait habits (lack of activity, chronic lying position ...), sport (diving ...)

1.5.12. Occupation

1.5.13. Toxic (drugs, professional, alcohol, smoking)

1.6. *Treatment*

- Current, recent modification
- Prior (ototoxic)

- Physiotherapy, cervical manipulation, vestibular training or repositioning manoeuvres (further details required)

2. Clinical examination

2.1. *Otorhinological*

2.1.1. Otomicroscopic examination

2.1.2. Rhinological examination depending on symptoms

2.2. *Oculomotor and nystagmus*

2.2.1. Visual control test

2.2.1.1. Gaze holding ability

2.2.1.2. Vertical or horizontal ocular misalignment

2.2.1.3. Restriction in ocular amplitude movements

2.2.1.4. Smooth pursuit and saccade testing

2.2.1.5. Inhibitory testing of vestibulo-ocular reflex (VOR)

2.2.2. Halmagyi test

2.2.3. With videoscopic or Frenzel glasses (without fixation)

2.2.3.1. Spontaneous and other gaze holding abnormalities

2.2.3.1.1. Vestibular nystagmus

2.2.3.1.2. Non-vestibular nystagmus

2.2.3.2. Positioning nystagmus (to be conducted at the end of the clinical evaluation)

2.2.3.2.1. Methodology (patient sitting, head to knees, supine, 90° lateral rotation of the whole body and head to the right, and then to the left, supine + head rotating, Hallpike or Brandt and Daroff, Rose, not necessarily in this order)

2.2.3.2.2. Clinical significance (diagnostic criteria)

2.2.3.3. Horizontal and vertical head shaking test

2.2.3.4. Dynamic visual ability

2.3. *Other cranial nerves*

- Face sensitivity defect (if neurinoma is suspected, complete facial sensitivity exploration, front pain sensitivity and corneal reflex included)
- Claude Bernard Horner's sign
- Face and oropharyngolaryngeal sensitivity

2.4. *Limbs*

2.4.1. Cerebellar signs in upper limbs (dysmetria, adiadocokinesia)

2.4.2. Sensation or motor defect in lower limbs

2.5. *Stato-kinetic tests*

2.5.1. Index test, finger pointing test

2.5.2. Romberg's test (standard or enhanced)

2.5.3. Unterberger or Fukuda

2.5.4. Standard gait and star gait tests

2.5.5. Gait exploration

2.5.6. Dynamic Gait Index

3. Diagnostic Progression

3.1. *Isolated Vertigo*

3.1.1. Isolated positioning vertigo

3.1.1.1. Positioning vertigo: 1st episode

3.1.1.1.1. If history evocative of benign paroxysmal positioning vertigo (BPPV):
otomicroscopy and hearing test;
search for the pathological canal;
execution of the repositioning manoeuvre.
After one week, check:
If asymptomatic: end of investigation
If residual symptoms persist after 2 or 3 repositioning manoeuvres: see 3.1.1.1.2.

3.1.1.1.2. If history and clinical presentation "atypical"

Baseline explorations: complete clinical examination (see chapter 3), hearing test, Brainstem Evoked Response Audiometry (BERA), Videonystagmography (VNG) Electronystagmography (ENG) + oculomotricity, subjective visual vertical perception test (SVV), Vestibular Evoked Myogenic Potentials (VEMP)

3.1.1.2. Positioning vertigo: relapse

Baseline exploration (seen in 3.1.1.1.2) + temporal bone scan if conductive hearing loss

3.1.2. Non-positioning isolated vertigo

3.1.2.1. If baseline exploration (see 3.1.1.1.2.) non-contributive: review patient history and test:

metabolic exploration (glycaemia and thyroid)
cardiovascular exploration
psychological exploration (anxiety, phobia ...)
migraine event

3.1.2.2. If baseline exploration suggests labyrinthic pathology (see VNG or ENG criteria)

Study of peripheral vestibular aetiological pathology:
If no result: VEMP to exclude inferior vestibular neuritis.
If cardio-vascular risk: exploration

3.1.2.3. If baseline exploration identifies non-labyrinthic pathology

(see VNG or ENG, BERA, oculomotricity criterias)
neurological exploration
specific neurological imaging

3.2. *Vertigo and hearing signs*

In any case, baseline exploration: hearing test, fistula test, BERA, VNG or ENG + oculomotricity, VVS, VEMP

3.2.1. Conductive hearing loss

tympanometry + acoustic reflex
temporal bone TDM if otosclerosis suspected, aqueduct dilatation, superior canal dehiscence syndrome ...

3.2.2. Perceptive hearing loss

tympanometry + acoustic reflex (level of reflex, "reflex Decay" test RDT)
supraliminar test
otoacoustic emissions

temporal bone and pontocerebellar angle MRI if retro-cochlear lesions suspected
(ECOG if Ménière's disease is suspected)
genetic investigation if familial history (DFNA9)

3.3. *Vertigo and neurological symptoms*

3.3.1. Vertigo and headache or facial algia

3.3.1.1. Patient with unusual vertigo and brutal headache
= Emergency (unusual intensity and localisation)
Exploration should be conducted within hours.

3.3.1.1.1. Latero-cervical pain
Look for vertebral dissection (MRI)

3.3.1.1.2. Occipital pain
Look for:

- expansive lesion of posterior fossa (infratentorial tumor, blood collection ...) (TDM)
- Arnold-Chiari decompensation (MRI)
- basilar aneurism (TDM)

3.3.1.2. Vertigo and usual known headache

3.3.1.2.1. Vestibular migraine
personal and familial history
usual provocative events like migraines

3.3.1.2.2. Anxious tension headache and vertigo
cervicalgia, whiplash
imbalance without vertigo

3.3.2. Vertigo, imbalance and visuals symptoms

3.3.2.1. Ocular disalignment or diplopia

3.3.2.1.1. horizontal

3.3.2.1.1.1. convergent

- nuclear or post nuclear VI nerve lesion
- somewhere near vestibular nuclei
- orbital trauma
- convergent spasm (post-traumatic)

3.3.2.1.1.2. divergent

- mesencephalic lesion or nerve III
- orbital lesion

3.3.2.1.2. vertical

3.3.2.1.2.1. skew, ocular tilt reaction
vertical saccades palsy in sub-thalamic lesions near otolithic pathway

3.3.2.1.2.2. nerve IV lesion (post-traumatic in 30%)

3.3.2.2. Non-vestibular nystagmus and oscillopsia

- gaze-evoked nystagmus
- acquired pendular nystagmus
- flutter, opsoclonus
- congenital nystagmus (idiopathic, latent non-compensated)
- oculomotor palsy (loss of vestibulo-ocular gain)

3.3.2.3. Excessive visual dependence
(generally after vestibular deficiency)

3.3.2.4. Post-refraction change
- multifocal lenses
- major and recent refraction correction

3.4. *Other vertigo*

3.4.1. Child vertigo
As adult specifications but particular focus on:
- serous otitis
- familial history of migraine
- tumours are more frequent
- food
- familial stress
- BPPV less frequent before 10 years of age

3.5. *Imbalance without vertigo*

3.5.1. Imbalance with or without hearing loss, without any neurological sign

3.5.1.1. Drug side-effect or interference (local or general), ototoxicity

3.5.1.2. Haemodynamic disorders
- blood pressure
- arrhythmia

3.5.1.3. Metabolic disorders
- diabetes
- dysthyroidia
- suprarenal dysfunction

3.5.1.4. Genetic (DFNA9 – COCH gene ...)

3.5.1.5. Anxiety, agoraphobia

3.5.2. Combine with neurological defect
Neurological exploration must be conducted

4. Laboratory examination (in accordance with §4 Diagnostic criteria indications)

4.1. *Hearing test*
Tonal, vocal, supraliminar, depending on pathology

4.2. *Tympanomatry/ Stapedial (acoustic) reflex*

4.3. *Auditory brainstem response*

4.4. *Electrocochleography (if Ménière's disease or perilymph fistula suspected)*

4.5. *Otoacoustic emissions*

4.6. *Vestibular evoked myogenic potentials (VEMP)*

4.7. *VNG or ENG* (normative data)

4.7.1. Gaze holding in primary and lateral positions under fixation (20 to 30° maximum)

4.7.2. Exploration for spontaneous and positional nystagmus without fixation

4.7.3. Ocular pursuit

4.7.4. Saccade analysis

4.7.5. Optokinetic pursuit

4.7.6. Rotatory/pendular tests

4.7.7. Caloric test

4.8. *Vertical or horizontal visual perception test*

4.9. *Posturography*

4.9.1. Static

4.9.2. Dynamic

4.10. *Vibratory nystagmus*

4.11. *Otolithic linear and rotatory test*

4.11.1. Excentric rotation test

4.11.2. OVAR

5. Treatment Strategy

5.1. *Medical treatment*

5.2. *Vestibular rehabilitation: soon in B-ENT (Symposium in November 2005)*

5.3. *Psychological approach*

5.3.1. Anxiolytic

5.3.2. Relaxation

5.3.3. Behavioural

5.3.4. Psychotherapy

5.4. *Surgical treatment*

Further readings

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