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## 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. Hypoacusia or hyperacusia, fluctuating hearing, diplacusia, distorsion

##### 1.2.2. Tinnitus: continuous, pulsating, positional

##### 1.2.3. Hearing fullness or pressure

##### 1.2.4. Otagia

##### 1.2.5. Otorrhea

#### 1.3. *Visual manifestations*

##### 1.3.1. Amaurosis

##### 1.3.2. Horizontal or vertical diplopia

##### 1.3.3. Oscillopsia

##### 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: 1<sup>st</sup> 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 labyrinthine 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-labyrinthine 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)

supraliminal 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. *Tympanometry/ 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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