Non-Vestibular Diagnoses in The Balance Clinic

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Topics
(Key Concepts
The History)
Aetiologies:
Physiological
Psychological
Neurological - peripheral
Neurological - central
Musculo-skeletal
Cardiovascular (Paraneoplastic)
Mass lesions
Endocrine
Multi-sensory

I have seen every condition we will discuss in my balance clinic in the last 14 years

Aetiologies: Physiological I
Height vertigo

May result from visual over dependence
(Increase in body sway results in increase movement of imagine on retina, but reaches a distance dependent limit)

Aetiologies: Physiological II
Motion sickness / Sea sickness

Central sensory conflict between visual, vestibular, and somatosensory inputs
Aetiologies: Physiological III
Purely visual:
Adjusting to new varifocal or bifocals, or after cataract surgery
Spatial disorientation when cars move next to you

Diagnosis?

Aetiologies: Psychological I
Hyperventilation
(care: testing with 30 breathes can reveal vestibular conditions including vestibular paroxysmia)
Chronic anxiety states and panic disorder
Consider:
Self help books
Psychologists
Benzodiazepines (including clonazepam)
Anti-depressants

Aetiologies: Psychological II
Somatization disorders

Chronic dizziness
Multiple ailments
Includes (non-BPPV) Phobic Positional Dizziness
Often seen after vestibular disorders
No easy treatment
Try and limit health care costs
Malingering

Posturography can be useful diagnostically

Neurology: Peripheral I
(100 + types!)
Peripheral neuropathy
(Actually a polyneuropathy)
Always test in chronic imbalance
DM (commonest+++
B1, B6, B12, E deficiencies
Alcoholism
Hypothyroidism
Autoimmune disorders
Chronic renal disease
Lyme disease, HIV

Autonomic neuropathy
(Another polyneuropathy)
DM (commonest)
GI, bladder symptoms, plus orthostatic hypotension

Neurology: Peripheral II
Charcot-Marie-Tooth
(Hereditary motor and sensory neuropathy)
Early adult onset+/-
One of commonest inherited examples (1:2,500?)
Pes cavus
Clawing toes
Slapping gait / foot drop /trips
Inverted champagne bottle legs
Numb feet
Areflexia

Neurology: Central
An example
Type of gait?
Possible causes?

Diagnosis?

Type of gait
“Marche a petits pas”

A short stepping gait with up right posture

(cf stooping shuffling step of Parkinson’s)
Aetiology of this Example?

Aetiology of this Example:
(Dawson’s finger)
Usually diffuse cortical dysfunction
Typically cerebrovascular disease (as here)
MS
Muscle weakness
(Occasionally Parkinson’s)

Aetiology: Central
(Migraine)
(Diffuse vascular disease)
Chiari malformation
Local ischaemia
Demyelinating
(Inflammatory)
Infective
Degenerative
Epilepsy
Drugs
Episodic ataxias
Benign intra-cranial hypertension and NPH
Trauma:
post-concussion syndrome
chronic sub-dural

Arnold-Chiari Malformation
Displacement of at least cerebellar tonsils (>5mm) through foramen magnum
Positional / cough dizziness / ataxia
Headache
Oscillopsia
Downbeat nystagmus
(SNHL and reduced calorics)
Local ischaemia I
PICA strokes
The commonest “dizzy” stroke
Cerebellar / vestibular nuclei infarction
Vertigo / tilt sensations
Ataxia
Dysarthria
AICA strokes
Mixed central and peripheral syndrome
Supplies pons/ cerebellum and labyrinthine artery
Vertigo
SNHL
Ataxia
+/- BPPV

Local ischaemia II
Vertebro-basilar insufficiency
Rare
Neck hyperextension in the young (hair washing); whiplash
Atherosclerosis in the old
Causes posterior fossa ischaemia
Transient vertigo, dysarthria, diplopia, drop attacks
Requires full cardiovascular work up
Imaging

Demyelinating
Multiple Sclerosis
5% present with vertigo
20% develop vertigo
Most we see eventually have cerebellar signs
If plaque in root entry zone of VIII can mimic vestibular neuritis
Full neuro exam looking for:
Internuclear ophthalmoplegia
Impaired smooth pursuit + ocular dysmetria
Babinski sign
Spasticity
Pale optic discs
Unilateral sensory disturbance

Peri-callosal hyperintensities of MS
Infective. An example:
Skull base TB
Wide differential here
Whole body CT showed (asymptomatic) lung lesions

Degenerative I. Basal Ganglia
Parkinson’s Disease
1% prevalence >70yo
Cardinal signs:
Bradykinesia
Flat affect
Rigidity
Tremor
Dysequilibrium
Shuffling gait
Reduced arm swing
Falls occur late

Degenerative II. Basal Ganglia
Progressive Supra-nuclear Palsy (PSP)
Presents in 50’s/60’s
2/3 present with loss of balance
Unsteady and fall early
Broad based gait
Ophthalmoplegia (loss of voluntary upgaze)
Dementia
Pseudobulbar palsy (dysphagia, dysarthria)
Rigidity
6 year survival
Multi-system atrophy (MSA)
Present’s in 50’s/60’s
Present with imbalance (22%)  
Rigidity (62%)
Unsteady and fall early (year 1)
GU dysfunction (may mimic autonomic neuropathy)
Parkinsonian, cerebellar, and autonomic dysfunction predominate
5-6 year survival
Degenerative III. (Spino-)cerebellar
Multiple types
Most begin in early adulthood
Friedreich’s ataxia presents age 7-25 with areflexia, ataxia, and dysarthria
Idiopathic late onset cerebellar ataxia
Prevalence 1:10,000 in UK
Present insidiously with gait and limb ataxia
Typically age 50+
Look carefully for cerebellar signs and refer to neurology

Episodic ataxia Type II
CACNA1A gene is tested routinely (£800)
Episodic dizziness lasting hours / days
Triggers include coffee, alcohol, stress (cf MD/migraine)
Usually you will find cerebellar signs (can be subtle) or FHx
Responds to acetazolamide +/-
In subtle cases look carefully at VNG / Caloric

BIH / NPH
Benign / idiopathic intra-cranial hypertension
Typically obese young women
Raised ICP
(Morning) headache
Poor coordination
Pulsatile tinnitus
Blurred vision
Papilloedema
Empty sella syndrome
Normal pressure hydrocephalus
0.5% over 65’s
Triad:
Gait disturbance (usually the presenting complaint and can be mild initially)
Gait becomes broad based, ataxic, and “magnetic”
Urinary incontinence
Memory decline

Epilepsy
Very rarely presents to balance clinic
“Alice in wonderland” syndrome – feel like falling down a hole (temporal lobe epilepsy)
Epilepsy may rarely be associated with “quick spin” type dizziness
Traumatic Intra-cranial haemorrhage
CVA's
SAH's
Diffuse bleeding
Chronic sub-dural haematoma

Centrally Acting Drugs
Phenytoin
Barbiturates
Carbamazipine
Lithium
5FU
Ataxia and dysmetric arm movements may result
Prochlorperazine
Parkinsonian symptoms

Another example
Type of gait?
Cause?

Cause?

Musculo-skeletal causes
Diagnosis:
Bilateral knee replacements
(Plus peripheral neuropathy)

Cardiovascular
Cardiovascular: Symptoms / Signs
Light headed
Need to sit / lie down
Pallor / sweating
History syncope
Palpitations
LOC
Pulse
Lying / standing BP
Heart sounds
ECG

Cardiovascular: Specific Investigations
Careful history including drugs
Bloods
Lying and standing BP at 0, 1, and 3 minutes with a fall in systolic BP of >20mmHg, or diastolic BP of >10mmHg
Tilt table testing through your syncope service
48 hour ECG
Echo cardiogram

Tilt Table Testing

Aetiology: Cardiovascular I
1. Neurally mediated syncope
2. Syncope due to Orthostatic hypotension
3. Cardiac syncope
1. Neurally mediated syncope
   Type
   1. Vasovagal
      Situational
      Carotid sinus syndrome
      Trigger
      Emotional distress, prolonged standing
   2. Cough, GI disturbance (visceral pain), micturition
   3. Tight collar, head rotation

2. Orthostatic hypotension
   Type
   Primary autonomic failure
   Secondary autonomic failure
   Drug induced

   Volume depletion
   Cause
   Primary failure, MSA, PD
   DM, amyloid, spinal cord injury
   Diuretics, vasodilators, tricyclics
   D&V

3. Cardiac Syncope I
   Type
   Arrhythmia as primary cause:
   Bradycardia
   Tachycardia
   Drug induced

   Cause
   Sinus or AV node disease
   Ventricular or SVT
   Atenolol, anti-psychotics, digoxin

3. Cardiac Syncope II
   Structural heart disease
   Aortic stenosis
   Cardiac masses
   Cardiomyopathy
Mass lesions
Vertigo with CPA lesions:

<1cm 27%
1-3cm 19%
>3cm 10%

Other tumours large enough to cause dizziness will usually show central signs.
Malignant brain tumours are rare in a balance clinic

Dysequilibrium with CPA lesions:
<1cm 37%
1-3cm 47%
>3cm 71%

Posterior fossa lesion: which one?

Endocrine / systemic
Anaemia
DM
Hypo- and hyper- thyroidism
Pituitary disorders
Addison's (adrenal insufficiency causing postural hypotension)
Menstrual / menarche / menopause

Multisensory dizziness
From deafferentation in the elderly:
Vision eg macular degeneration
Proprioceptive
Musculoskeletal / joint replacements
Hearing loss
Peripheral neuropathy
Vestibular hypofunction
Depression, anxiety and isolation
Summary
A broad medical knowledge is helpful in both redirecting those patients we cannot manage ourselves and reducing the need for referrals.

Joint clinics (e.g., neuro-otology) are a good educational resource.

“Spin Doctors” club if you are enthusiastic.