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Vestibular migraine

BASH educational meeting, 24/10/2025

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National Migraine Centre

National Migraine Centre
Get back to living

Overview

- Vestibular migraine – symptoms
- Vestibular migraine vs. migraine-associated vertigo – what's in a name?
- Vestibular migraine – who sees these patients…?
- PPPD
- A case

Epidemiology

- VM may affect up to 2.7% of the general population
- It is common
- The most common vestibular disorder
- Where are these patients?!
- Potential barriers

Background and historical aspects

2012: consensus criteria for diagnosis of VM published

2013: introduced in ICHD-3

IHS Classification ICHD-3

2021: Updated diagnostic criteria

Bárány Society
The International Society for Neuro-otology, Vestibular Medicine, and Vestibular Research

Diagnostic criteria

- VM remains a ‘committee’ disorder to date… no biomarker

- Correct diagnostic criteria must be applied to:
  - ensure uniform reporting
  - For appropriate recruitment to research studies
  - To ensure other vestibular disorders are given consideration

Diagnostic criteria

A. At least five episodes fulfilling criteria C and D

B. A current or past history of 1.1 *Migraine without aura* or 1.2 *Migraine with aura*[1]

C. Vestibular symptoms[2] of moderate or severe intensity[3], lasting between 5 minutes and 72 hours[4]

D. At least half of episodes are associated with at least one of the following three migrainous features[5]:

1. headache with at least two of the following four characteristics:
    a) unilateral location
    b) pulsating quality
    c) moderate or severe intensity
    d) aggravation by routine physical activity
2. photophobia and phonophobia[6]
3. visual aura

E. Not better accounted for by another ICHD-3 diagnosis or by another vestibular disorder.

Notes:

1. Code also for the underlying migraine diagnosis.

Vestibular symptoms

Journal of Vestibular Research 19 (2009) 1–13
DOI 10.3233/VES-2009-0343
IOS Press

Classification of vestibular symptoms: Towards an international classification of vestibular disorders

First consensus document of the Committee for the Classification of Vestibular Disorders of the Bárány Society

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On behalf of the Committee for the Classification of Vestibular Disorders of the Bárány Society: Pierre Bertholon, Alexandre Bisdorff, Adolfo Bronstein, Herman Kingma, Thomas Lempert, Jose Antonio Lopez Escamez, Måns Magnusson, Lloyd B. Minor, David E. Newman-Toker, Nicolás Pérez, Philippe Perrin, Mamoru Suzuki, Michael von Brevern, John Waterston and Toshiaki Yagi

Received 4 February 2009
Accepted 1 September 2009

Vestibular symptoms

- Vertigo
- Dizziness
- Unsteadiness

- Triggers
  - Spontaneous
  - Motion-induced

- Motion-induced
  - Self motion
  - Head motion
  - Visual motion
  - positional

- Depersonalisation

- Visual lag

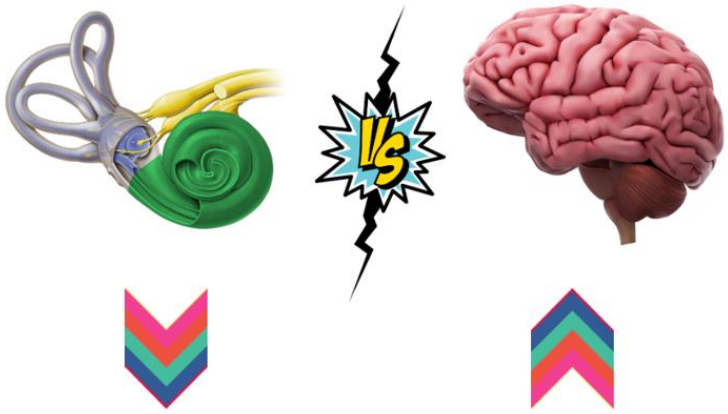
- lateralpulsion

Vestibular migraine – what's in a name?

Previously used terms:

Migraine-associated vertigo/dizziness; migraine-related vestibulopathy; migrainous vertigo.

Vestibular disorders: loss vs. hyperexcitability



Vestibular migraine – what's in a name?

Problems addressed in this visit

- **Migraine with aura**
- **Persistent postural perceptual dizziness - Primary**
- **Migrainous vertigo**
- **Medication overuse headache**

Problem **Migraine variants** *(First)* - Vestibular

Request ID: 53784
Suggested term:
Summary of request:

Request for change of concept name from 'migrainous vertigo' to 'vestibular migraine'.

Request Description:

Vestibular migraine is the correct, up-to-date term for the condition previously known as 'migrainous vertigo'.
At present, with the parent concept title of 'migrainous vertigo' in place, we are unable to apply the correct code of vestibular migraine. The former term is actually unknown to many vestibular- and headache-specialists, neurologists, ENT and audiovestibular physicians who are the primary initial users of the term vestibular migraine. If we are not using this term correctly, worldwide, then the code cannot be applied correctly at a primary care level either and so understanding, from patients and clinicians, and treatment outcomes remain very poor. Epidemiological data cannot be gathered and research efforts are hampered.

We can confirm that your request is now complete.

The fully specified name of the concept 232284007 has been changed to Vestibular migraine (disorder) in the current release of the SNOMED CT United Kingdom Clinical Extension.

SNOMED CT ID: 232284007

SNOMED CT Term: Vestibular migraine (disorder)

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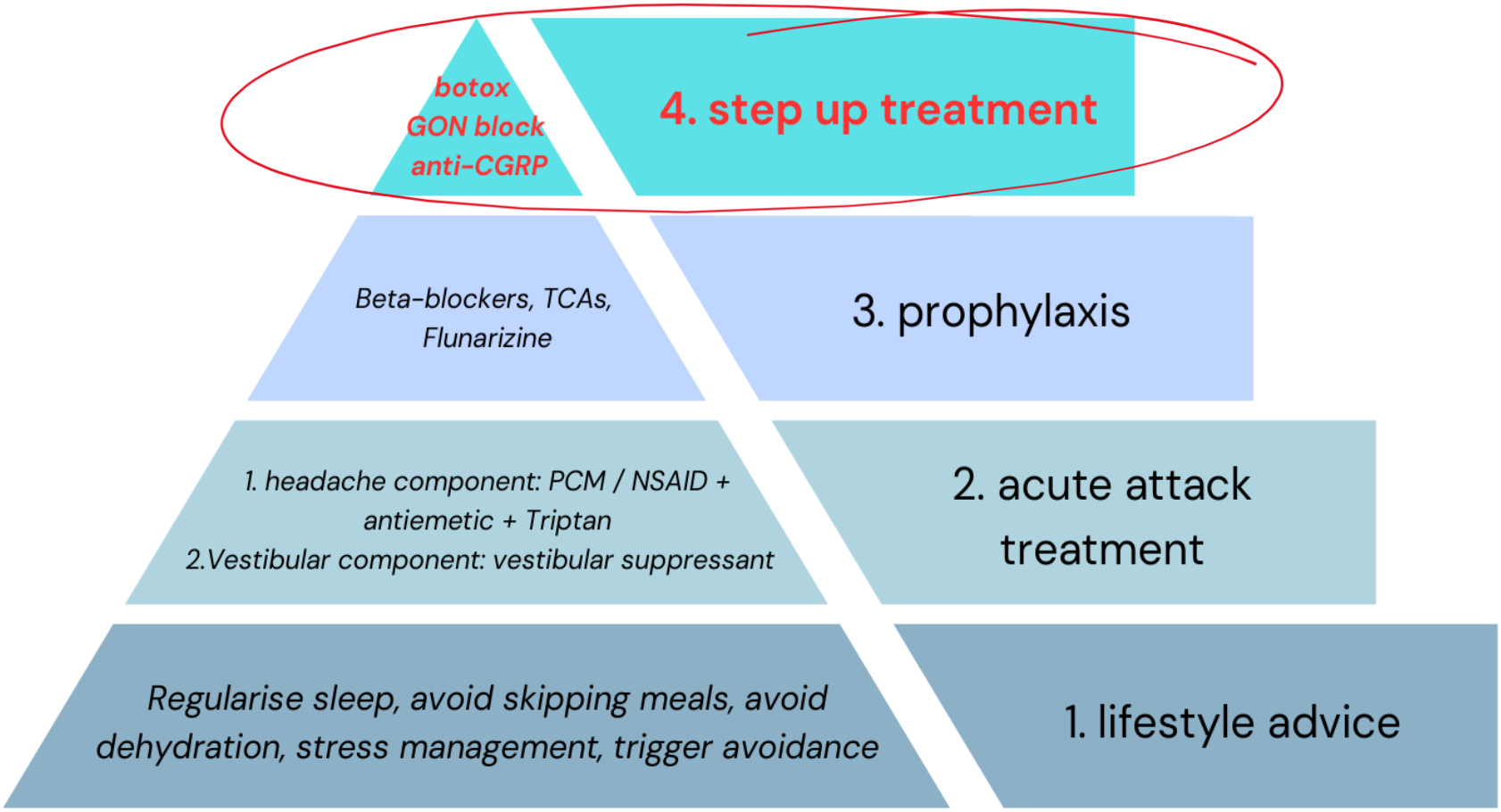
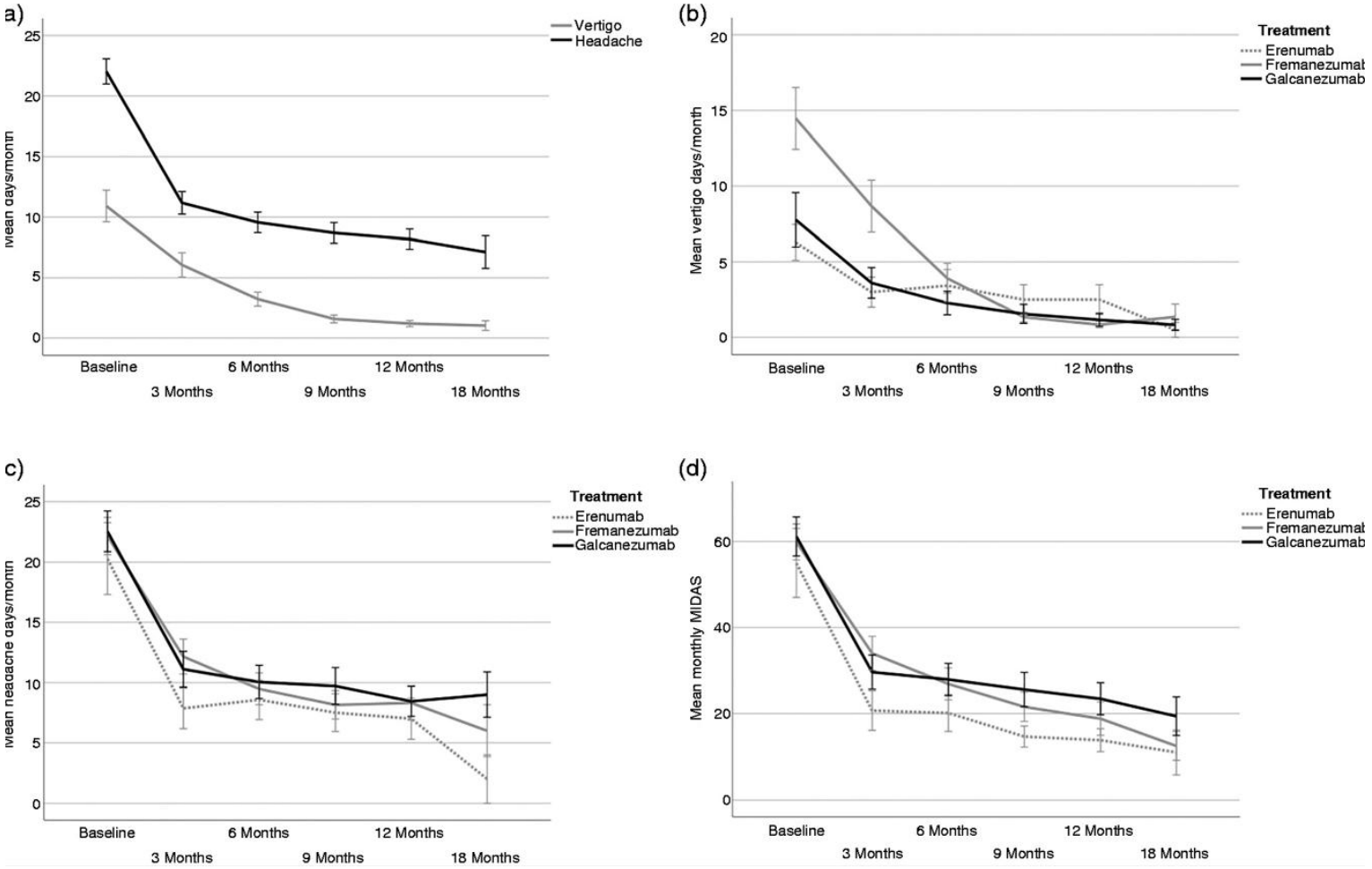
Vestibular migraine – who sees these patients?

- Primary care
- ENT
- Neurology
  - headache service vs. general neurology
- Audiology
- Vestibular physiotherapists
- Audiovestibular medicine

Does it matter?



Anti-CGRP: mAbs - evidence in vestibular migraine



45 (90%) patients had at least a 50% reduction in vertigo frequency, 43 (86%) had at least a 50% reduction in headache frequency, and 40 (80%) a MIDAS reduction of at least 50%

Russo CV et al. *Cephalalgia.* 2023 Apr;43(4):3331024231161809

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Anti-CGRP: mAbs - evidence in vestibular migraine

1st Author, year	Country	Study Design	Sample	Diagnosis	Evaluation	Drugs (dose)	Study period	Enpoints	JBI's rating
Hoskin, 2022	USA	Retrospective cohort study	25	NR	Clinical	Erenumab Galcanezumab Fremanezumab Ubrogepant (NR)	NR	6 moderate improovment 9 significant improovment 6 mild improovment 4 no improovment	1/8
Russo, 2023	Italy	Prospective cohort study	50	BS-IHS	Clinical, MIDAS	Erenumab (140 mg) Fremanezumab (225 mg) Galcanezumab (120 mg)	78 weeks	mean MDD from 10.3 ± 1.9 to 0.7 ± 0.2. mean MIDAS scores from 52.8 ± 5.0 to 14.3 ± 3.2 mean MDM from 20.9 ± 1.6 to 9.3 ± 1 to 6.4 ± 1.2	4/8
Lovato, 2023	Italy	Retrospective cross-over cohort study	23	BS-IHS	Clinical, Videonistagmography, DHI	Erenumab (140 mg)	26.4 ± 2.1 weeks	mean MDM from 12.4 to 5.1 positional nystagmus from 47.8–4.3% of patients mean DHI from 30.2 ± 7.2 to 8.1 ± 3.1	5/8
Inui, 2023	Japan	Case report	1	BS-IHS	Videonistagmography, cVEMP, PTA, DHI, MIDAS, HIT	Erenumab (70 mg)	52 weeks	Improovment of Videonistagmography, cVEMP, PTA, DHI, MIDAS, HIT	NA
Sharon, 2020	USA	RCT protocol*	50	BS-IHS	VM-PATHI, DHI, MIDAS	Galcanezumab	NA	NA	NA

Abbreviation: BS-IHS (Barany Society and International Headache Society), cVEMP (cervical Vestibular Evoked Myogenic Potential); DHI (Dizziness Handicapi Inventory); HIT (Headache Impact Test); MDD (Monthly Days with Dizziness); MDM (Monthly Days with Migraine); MIDAS (Migraine Disability Assessment); NR (Not Reported); PROMIS SF (Patient-Reported Outcomes Measurement Information System Short Form); PTA (Pure Tone Audiometry); RCT (Randomized Control Trial), VM-PATHI (Vestibular Migraine-Patient Assessment Tool and Handicap Inventory).

*the study is ongoing, protocol available at https://clinicaltrials.gov/study/NCT04417361#contacts-and-locations.

Frosolini A & Lovato A. *Indian J Otolaryngol Head Neck Surg.* 2024;76(4):377–3744

Further work:

- *? Efficacy of one mAb over another in VM specifically*
- *? Efficacy of mAb anti-CGRP therapy with low headache burden*

Anti-CGRP: Gepants - evidence in vestibular migraine

Evidence: 0

No studies or reviews evaluating use of Gepant therapy, specifically Rimegepant or Atogepant, in the VM cohort.

In progress:

- *"A Placebo Controlled, National, Multi-center, Randomized Clinical Trial of Rimegepant for Vestibular Migraine Evaluation: the REVIVAL Study"* - registered. Opened to recruitment April 2025
- Change in number moderate / severe vestibular symptom days and change in Vestibular Activities of Daily Living Scale (VADL) score from baseline to week 16

Chronic vestibular migraine

‘Chronic vestibular migraine’ is not a defined term

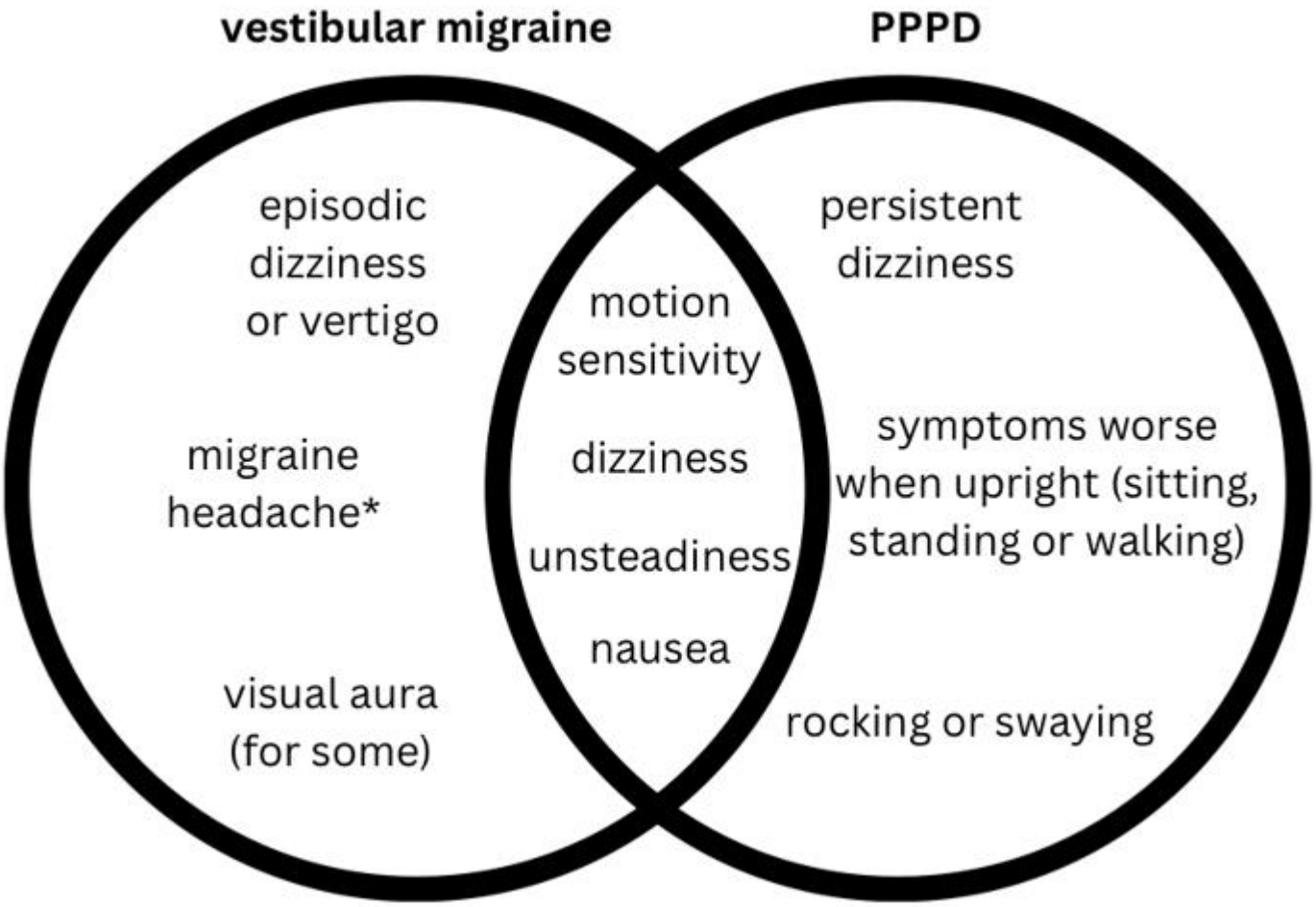
Whilst VM is recognised as a sub-type of migraine (in the ICHD-3 appendix), there is no formal definition for a chronic form of vestibular migraine

Persistent Postural Perceptual Dizziness

Diagnostic criteria*

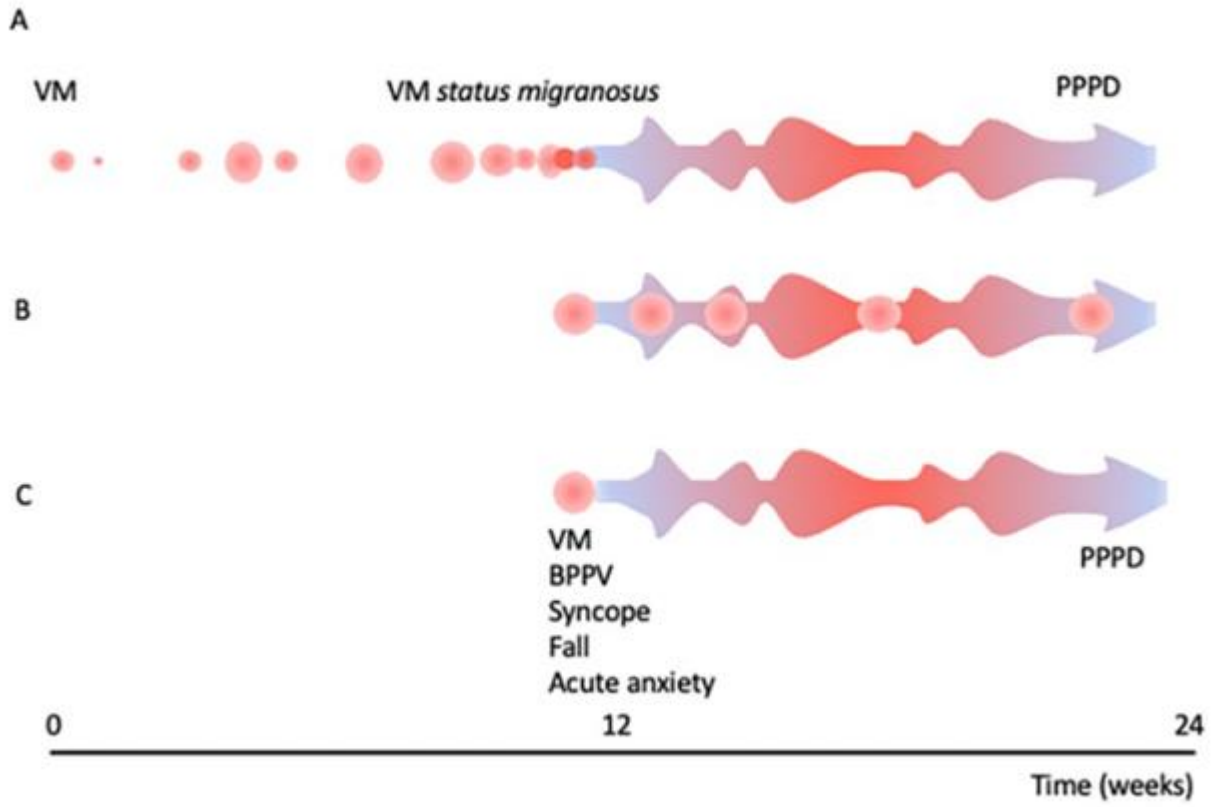
1. Dizziness, unsteadiness, non-spinning vertigo
2. Symptoms for at least 3 months
3. Timing: persistent, present most days, severity can fluctuate
4. Provoking factors: complex visual movements or patterns, head movement, worse when sitting or standing up.
5. Onset: trigger event including peripheral vestibular conditions, vestibular migraine, concussion, acute psychological overwhelm
6. Significant impairment – e.g. daily activities
7. Not better accounted for by another neuro-otologic disease

VM vs. PPPD


vestibular migraine
PPPD
episodic dizziness or vertigo
migraine headache*
visual aura (for some)
motion sensitivity
dizziness
unsteadiness
nausea
persistent dizziness
symptoms worse when upright (sitting, standing or walking)
rocking or swaying

Timeline VM vs. PPPD

Evolution from VM to PPPD



Tarnutzer AA, Kaski D. Brain Sci. 2023 Dec 7;13(12):1692.

Case

- 55 year old, Burmese man
- Bus driver

- Referral from ENT:
  - Unsteadiness
  - Vertigo
  - Right-sided hearing loss – not new, present since 2015. MRI IAMs normal
  - *'Neck movements trigger his dizziness as well as loud sounds and moving images. I did Dix-Hallpike test which was inconclusive but he does have +1 gaze-evoked nystagmus and head thrust to left was positive.'*
  - Please see soon, he is about to lose his job

History

- **2015:** right-sided **hearing loss** - detail unclear, gradual onset, possibly associated with dizziness at that time
- **2020:** **acute vertigo** episode. Triggered by leaning fwd to wash face in sink -> vertigo + vomiting. Lasted hours but took one week to fully recover
- Since then: episodic mild **disorientation and dizziness**

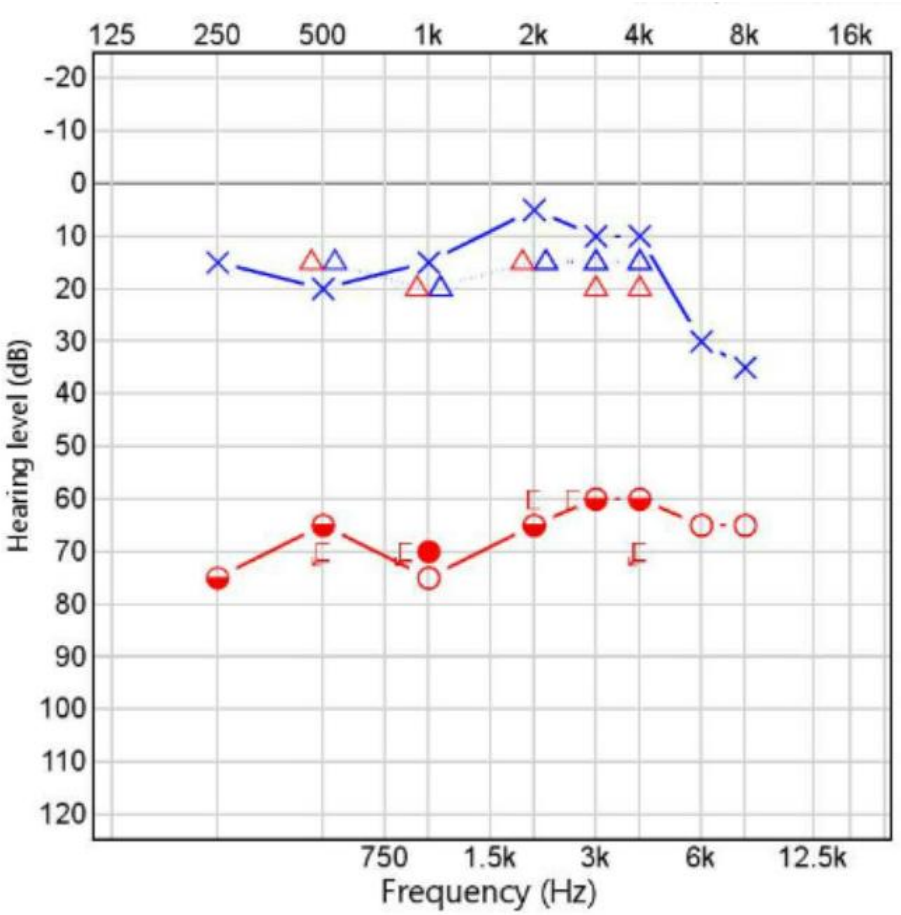
- In addition to this, for the last ~18 months he is describing additional difficulties, **visual vertigo**: inability to wash plates in the sink - circular visual motion, spatial disorientation in open spaces, dislike of supermarkets and lifts, a constant sense of the floor feeling unsteady.
- Avoids all use of mobile phone - scrolling and back lights, struggles to watch more than one film on the TV.
- Describes **oscillopsia**.
- Now ceased driving completely (DVLA guidance for dizziness).

- Longstanding headache history:
  - episodic headache since his teenage years.
  - Associated light- and sound-sensitivity.
  - Triggered by lack of, or excess sleep.
  - Frequency ~5-6 per month now, frequently slightly increased lately.

History and examination

- Medical history: hypercholesterolaemia
- Medication: Atorvastatin

- Examination:
  - Subtle left-beating nystagmus in primary position (looking straight ahead), otherwise unremarkable
  - Head impulse negative – i.e. no catch up saccades, right or left
  - Struggled with tandem gait, unsteady on Romberg's



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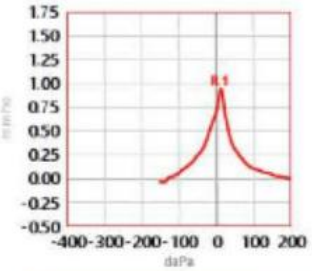
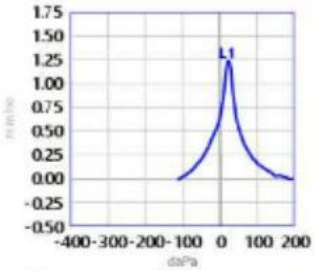


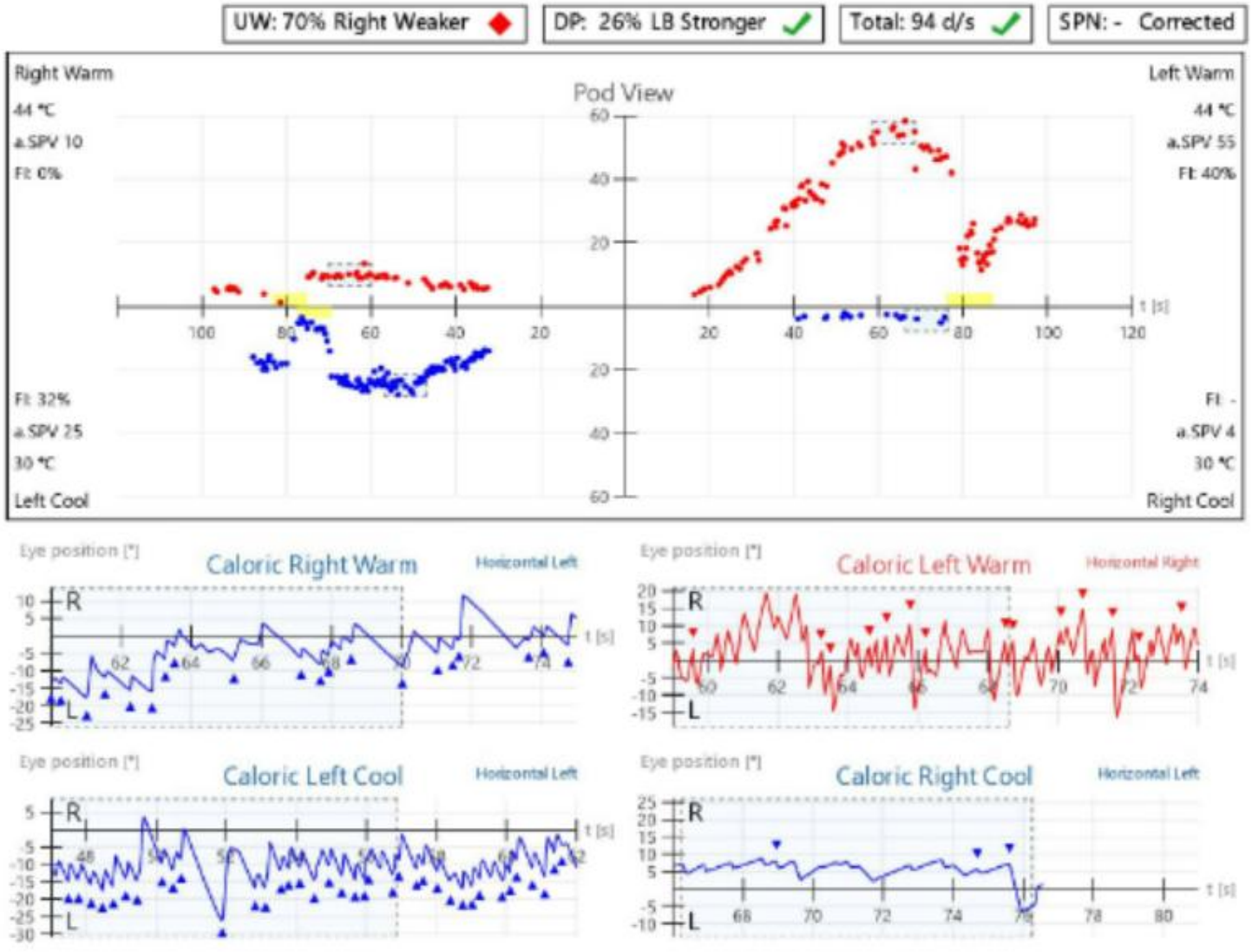
Tymp	Right
Tone	226 Hz
SC	0.9 ml
TPP	14 daPa
ECV	1.0 ml
TW	56 daPa
Type	A



Tymp	Left
Tone	226 Hz
SC	1.2 ml
TPP	24 daPa
ECV	1.2 ml
TW	47 daPa
Type	A

Reflex	Screening (dB HL)					Decay (s)	
	500	1k	2k	4k	BBN	500	1k
R Ipsi							
L Ipsi							
R Contra							
L Contra							

Caloric


UW: 70% Right Weaker
DP: 26% LB Stronger
Total: 94 d/s
SPN: - Corrected
Right Warm
44 °C
a.SPV 10
Ft: 0%
Ft: 32%
a.SPV 25
30 °C
Left Cool
Pod View
Left Warm
44 °C
a.SPV 55
Ft: 40%
Ft: -
a.SPV 4
30 °C
Right Cool
Eye position [°]
Caloric Right Warm
Horizontal Left
Caloric Left Warm
Horizontal Right
Caloric Left Cool
Horizontal Left
Caloric Right Cool
Horizontal Left
R
L
t [s]

Investigations, conclusion

- Caloric test: 70% right sided vestibular paresis ('weakness')
- MRI Meniere's imaging: right side grade 3 vestibular and grade 1 cochlear hydrops.

- Conclusion:
  - Longstanding migraine without aura – increasing frequency of attacks
  - Right Meniere's
  - (Emerging PPPD)

  Note overlap between vestibular migraine and Meniere's

- Management:
  - Amitriptyline, Betahistine, vestibular rehab

Further talks / topics

- BPPV and VM
- Paediatric vertigo syndromes related to migraine
- VM-Meniere's disease overlap syndrome
- Vestibular rehab for VM / PPPD
- Management of motion sickness
- VM and psychology
- Eye movements in VM
- VM and PPPD – PROMs / questionnaires
- Mal de debarquement syndrome
- 'cervicogenic dizziness'
- Acute vestibular syndrome / HINTs
- Vestibular function tests

References

Tarnutzer AA, Kaski D. What's in a Name? Chronic Vestibular Migraine or Persistent Postural Perceptual Dizziness? Brain Sci. 2023 Dec 7;13(12):1692. doi: 10.3390/brainsci13121692. PMID: 38137140; PMCID: PMC10741489.

Frosolini A & Lovato A. *Indian J Otolaryngol Head Neck Surg.* 2024;76(4):377–3744

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Journal of Vestibular Research, Volume 19 (2009), Issues 1-2, pp. 1-13

Lempert T, Olesen J, Furman J, Waterston J, Seemungal B, Carey J, Bisdorff A, Versino M, Evers S, Kheradmand A, Newman-Toker D. Vestibular migraine: Diagnostic criteria1. J Vestib Res. 2022;32(1):1-6. doi: 10.3233/VES-201644. PMID: 34719447; PMCID: PMC9249276.

Useful resources

- BMJ practice pointer - Agarwal K, Harnett J, Mehta N, Humphries F, Kaski D. Acute vertigo: getting the diagnosis right *BMJ* 2022; 378 :e069850 doi:10.1136/bmj-2021-069850

- Acute vertigo: Identifying possible causes | The BMJ

- BMJ 10 minute consultation - Kaski D, Agarwal K, Murdin L. Acute vertigo. BMJ. 2019 Sep 12;366:l5215. doi: 10.1136/bmj.l5215. PMID: 31515203.

- PPPD: Functional Dizziness (PPPD) – Functional Neurological Disorder (FND) (neurosymptoms.org)

For **patients:**

- patient.co.uk PILs (BPPV, Meniere's – DOI, some are written by me).
- Right posterior canal BPPV self-treatment: https://youtu.be/iYXASN36j8g
- Left posterior canal BPPV self-treatment: https://youtu.be/qoJnKt7Tmf0
- Meniere's and Vestibular UK – national vestibular charity: https://www.meandve.org.uk/

Learn BPPV - app

Eye movement videos (nystagmus, BPPV, head impulse testing…)

https://novel.utah.edu/collection/dan-gold/#tab-collection