Non-Vertiginous Dizziness

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June 22, 2024

Correct diagnosis

1. **Targeted** Hx taking: 75%
2. Clinical office (bedside) examinations
3. Functional testing of the inner ear
4. Imaging

Labuguen et al *Am Fam Physician* 2006
Halmagyi et al *Neurol Clin* 2015

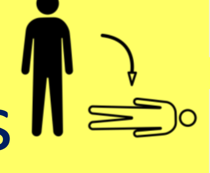
History, History, History

- Patients' descriptions: notoriously unreliable
- A quick sniff→ Categorize

1. **Vertigo:** Illusion of self-motion or surroundings
2. **Presyncope/Near fainting/Lightheadedness:** rising
3. **Disequilibrium/ Falling sensation:** primarily when walking
4. **Non-specific**

Halmagyi et al *Neurol Clin* 2015
Hogue, *Prim Care Clin Office Pract* 2015

Not entirely ✓, Nor entire ✗

Vertigo		Vestibular
Presyncope Lightheadedness		Cardio-Vascular
Disequilibrium Falling sensation		Neurological
Non-specific		Psychiatric, Metabolic

Alexandre Bisdorff, et al *Front Neurol.* 2013

1.Vertigo

- BPPV, VN, MD, Vestibulopathy
- VM, TIA (VBI)

2.Presyncope/Near fainting/Lightheadedness True syncope較少出現在ENT

- Rate: Brady, Tachy (Arrythmia)
- Volume: Dehydration; blood loss
- Pump: CV (Ischemia, Valve)
- Atherosclerosis, Epilepsy
- Hypoglycemia
- Postural hypo, POTS (ANS?)
- Vasovagal (Triggers?)

3.Disequilibrium/Falling sensation Mainly走路時才有症狀

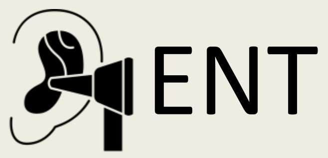
- Bil VP; Mul sensory deficits, Parkinsonism
- C myelopathy, SCA
- Musculoskeletal
- Cerebellum
- CVA, TIA (VBI)

4.Non-specific

- Mul sensory deficits
- Post head trauma, post CVA
- Cervical
- E^-, Sugar, Thyroid
- PPPD, Psychogenic (Anxiety, Depression, Agoraphobia, Panic)
- Meds (antidepressants, anticholinergics, everything……)

Few thoughts in my mind

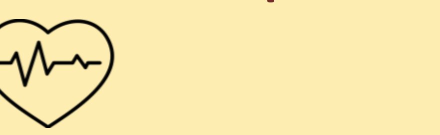
1. **D/D Vertigo is easier**
   - Ask “When/How was the first attack?”
   - True vertigo initially, vestibular more likely: BPPV, VN, MD, (VM)
2. **Don't rush to get a Dx** at 1st visit
   - Do NE (Gait, EOM, HINT), Risk assessment
   - Do follow whenever you feel uncomfortable
3. **≥ one causes**



走江湖要有好朋友

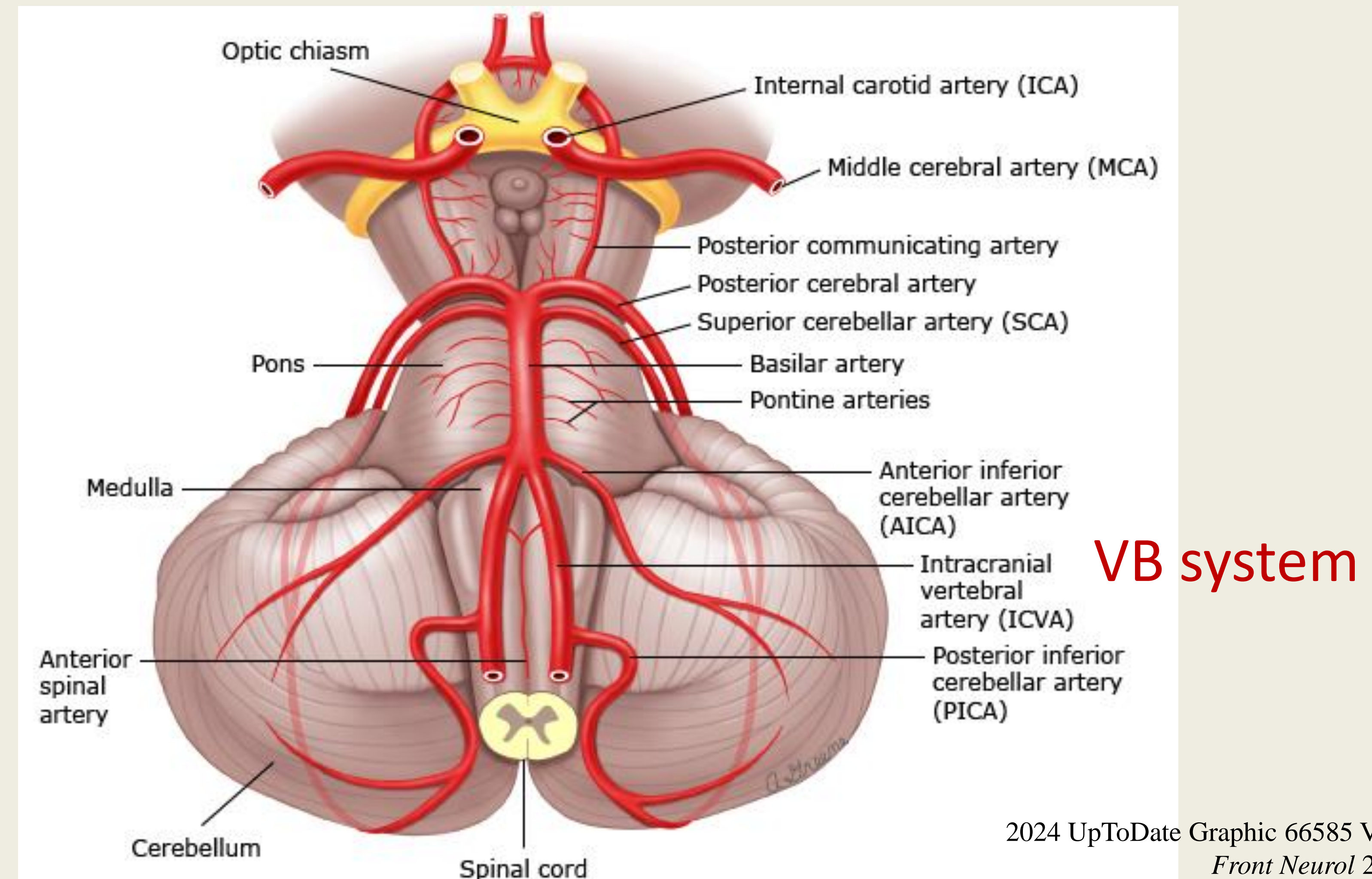
Vertigo	Non-Vertiginous Dizziness
塞進去	把不是的丟掉
1. 真的旋轉(或移動)嗎? ~ 跟姿勢有關? ~ 床上翻身會暈? ~ 暈一分鐘	1. 好像快要不省人事嗎? ~ 真有喪失意識? (有目擊者最好)
2. (女生)頭痛嗎? ~ 以前就會or新的? ~ 怕光怕吵嗎? ~ 小時候暈車	2. 還是要跌倒的感覺嗎? 3. 走路或站著暈? OR 坐著不動暈? **第一次是怎樣
3. 同時耳鳴耳悶聽不見嗎? ~ 單耳? ~ 以前有發作過嗎?	4. 都不是, 那是……
	血管Risk factors; ABCD2, 以前中風

Acute Dizziness Red Flags:

<table>
<tr><td>TIA
CVA</td><td>Hx
NE/HINT </td><td rowspan="3">Risk assess
Referral</td></tr>
<tr><td>Arrhythmia
CV</td><td>Hx/Chest pain/Palpitation
 </td></tr>
<tr><td>E^-
Sugar</td><td>Hx </td></tr>
</table>

Posterior Circulation

- Ischemia involving posterior circulation: 22%



VB system

2024 UpToDate Graphic 66585 V.4.0
Front Neurol 2014

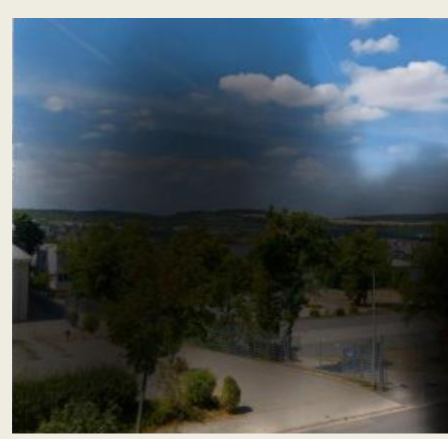
Posterior Circulation TIA

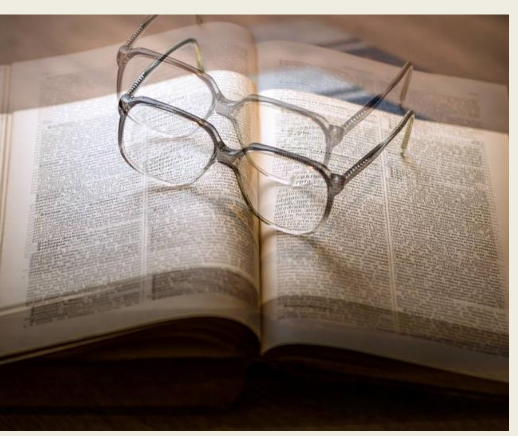
1. Sudden onset dizziness, vertigo, gait problem

2. Aphasia or Dysarthria

3. Hemiparesis and/or Hemisensory loss

4. Transient monocular blindness (amaurosis fugax), Hemianopia, Diplopia





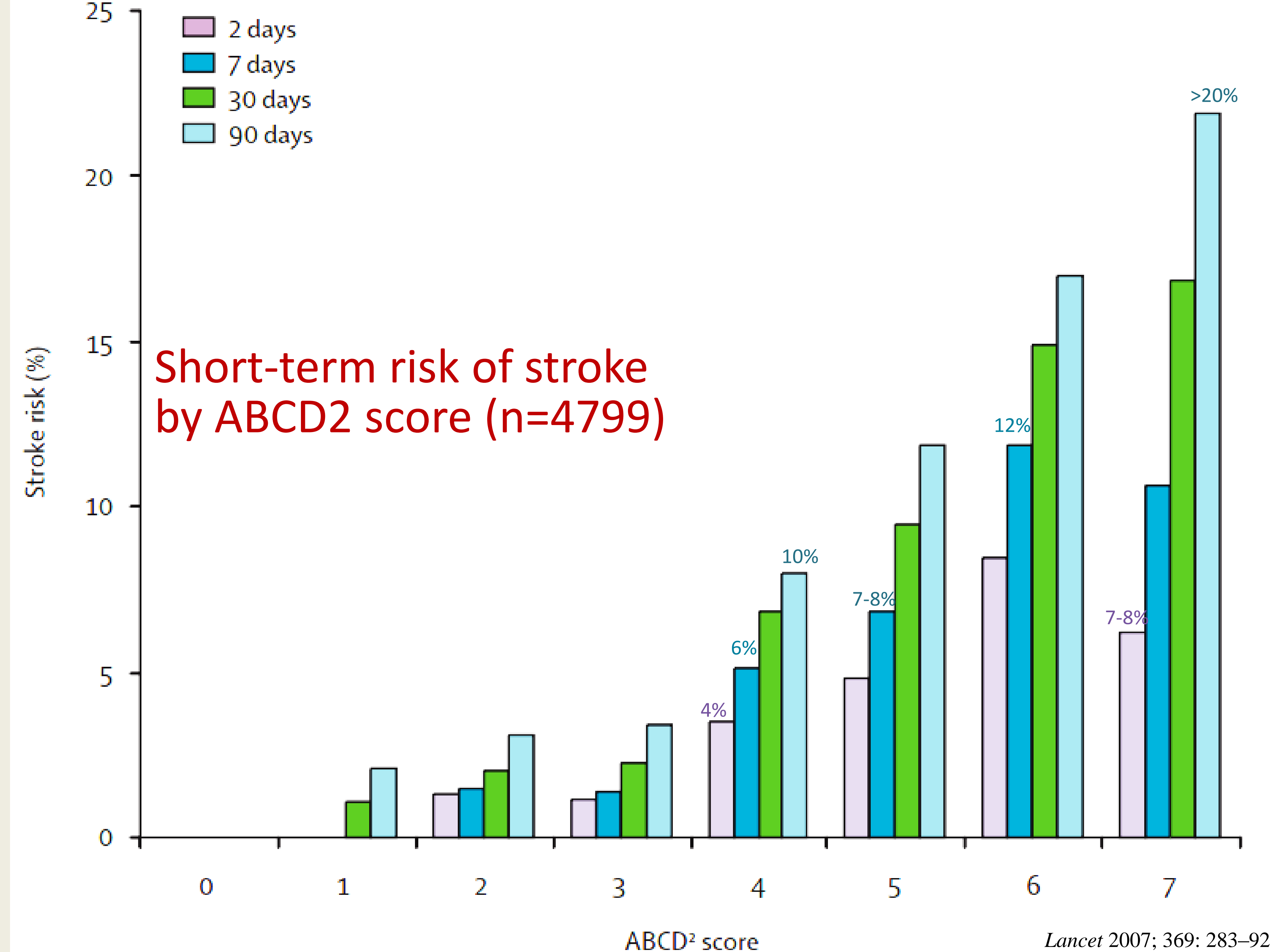
- Smells like TIA
- Do ABCD2

Estimate the **Risk of Stroke after** a suspected **TIA**

ABCD2	Findings	Score
Age	Age ≧ 60	1
BP	Systolic ≧ 140 or Diastolic ≧ 90	1
Clinical features	Unilateral weakness	2
	Speech disturbance without weakness	1
Duration of symptoms	＜10 mins	0
	10-59 mins	1
	≧ 60 mins	2
DM	Yes	1

ABCD2 score	2-day stroke	7-day stroke	90-day stroke
0-3 (low risk)	1%	1.2%	3.1%
4-5 (moderate risk)	4.1%	5.9%	9.8%
6-7 (high risk)	8.1%	12%	18%

The Journal of Family Practice 2017, Wardlaw JM et al. *Neurology* 2015



2 days
7 days
30 days
90 days
Short-term risk of stroke by ABCD2 score (n=4799)
Stroke risk (%)
ABCD² score
0
5
10
15
20
25
1
2
3
4
6
7
4%
6%
10%
7-8%
12%
7-8%
>20%
Lancet 2007; 369: 283–92

Posterior Circulation Ischemia

純

1. Sudden onset dizziness, vertigo, gait problem

2. Aphasia or Dysarthria

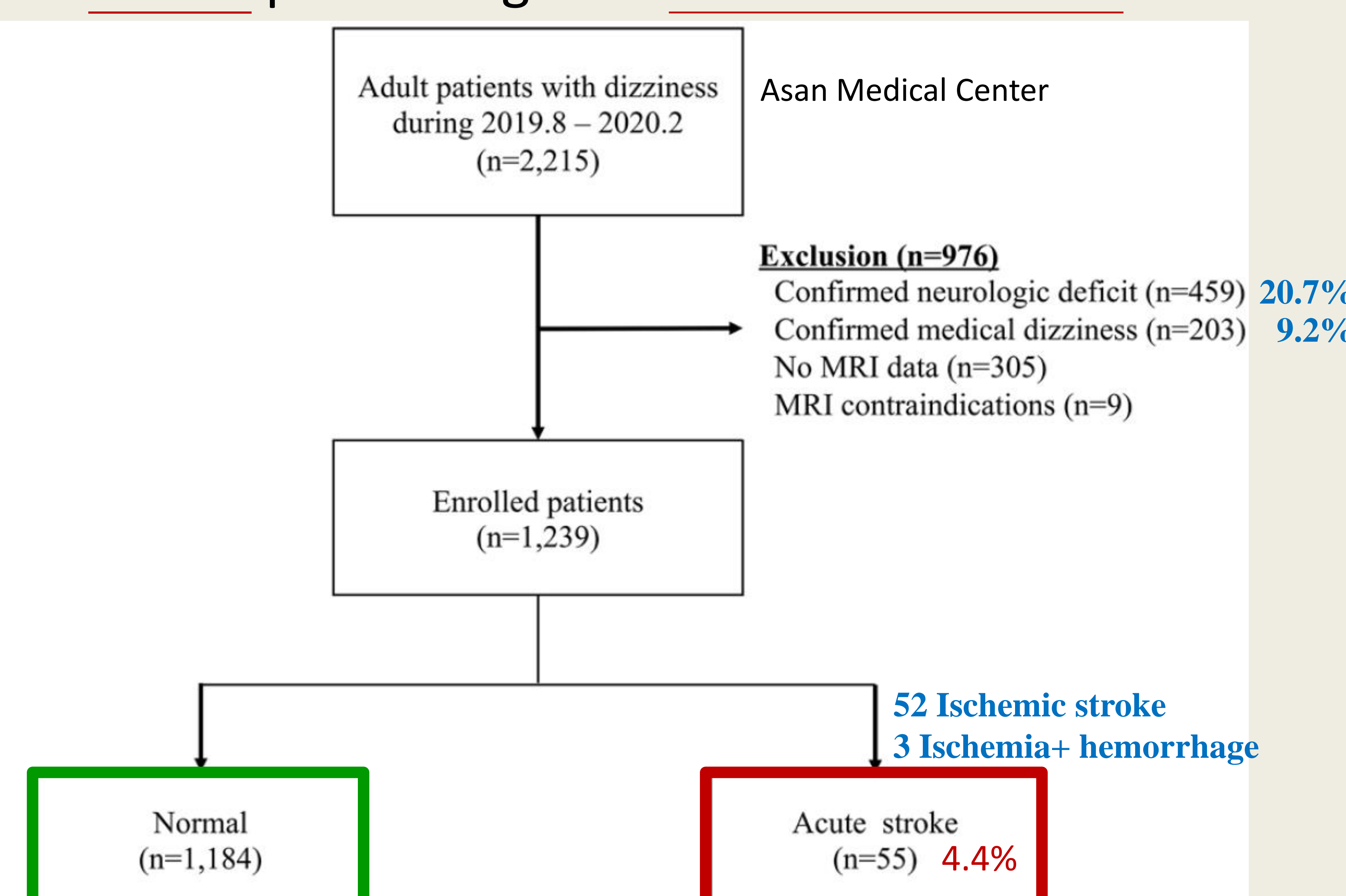
3. Hemiparesis and/or Hemisensory loss

4. Transient monocular blindness (amaurosis fugax), Hemianopia, Diplopia

Dizziness is *seldom the only* neurologic symptom

Usually comes with other signs of hindbrain ischemia

Stroke presenting with Isolated dizziness in ER



Scientific Reports 2021; 11:6114

Independent risk factors for predicting acute stroke presenting with Isolated dizziness in ER: **Hx of CVA** & **age > 65** (多變項)
(Others: HTN/ Af/ NOT-whirling/ NOT position related) (單變項)

Variables	Univariable			Multivariable		
	OR	95% CI	*p* value	Adjusted OR	95% CI	*p* value
Male	1.60	0.93–2.76	0.09			
HTN	1.77	1.02–3.05	0.04			
Hyperlipidemia	1.69	0.94–3.04	0.08			
CVA	3.31	1.69–6.50	<0.01	3.08	1.24–7.67	0.02
Atrial fibrillation	3.18	1.37–7.36	<0.01	2.40	0.82–7.01	0.11
Non-whirling	1.92	1.09–3.36	0.02	1.91	0.91–3.99	0.09
Irrespective of head positioning	2.07	1.13–3.79	0.02			
Tinnitus	0.31	0.07–1.31	0.09			
Age > 65	2.68	1.48–4.85	<0.01	3.01	1.33–6.83	<0.01
Glucose	1.39	0.77–2.51	0.27			
Creatinine > 1.5	2.31	0.78–6.78	0.12			

Scientific Reports 2021; 11:6114

I'VE CUT BACK TO JUST
ONE
CUP
OF COFFEE
A DAY!

Listen to the patient

1. Encouraged to describe the sensation experienced in their own words. The way a patient describes the dizziness is often key to the Dx.
   鼓勵病患用自己的話描述(人事時地物)

2. Not truly spinning or tilting 雖然有時候難以形容
   - Great difficulty in describing their symptoms
   - Lightheadedness, heavy-headedness, floating, earthquake, not real 頭沉沉頭浮浮頭空空, 怪怪的

Listen to the patient

Other symptoms which precede or accompany

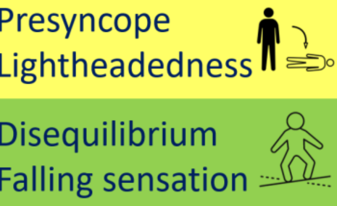
適度切入抓重點

Headache	Migraine
N/V, diarrhea	Viral infection
HL, tinnitus	Cochlea/ 8th nerve
Autonomic: N, V, pallor, diaphoresis	Peripheral vestibular
Palpitations, visual acuity change, generalized weakness, hypotension	Cerebral perfusion↓
Focal Neurologic, diplopia, dysarthria	Central

Common Causes of Non-Vertiginous Dizziness

1. Migraine
2. Presyncope
3. Multisensory
4. Ocular
5. Psychophysical
6. Cervical vertigo

Case 1



Non-specific

Joana 38歲
六個月前開始頭暈, 整天頭重腳輕的

- X: Provoked by head motion, in a car, playing video games, or within 15 min of running on a treadmill
  - But No obvious trigger sometimes
- O: not sure
- Lasting mins~ hours; catamenial exacerbation

Digging deeper

- Past Hx: Severe motion sickness; Headaches (typically unilateral, throbbing), with or without dizziness

Possible Dx? Vestibular migraine, PPPD

- Migraine Hx, vestibular symptoms in 30s~ 40s
- ↑ peri-menopause
- Headache average 8 years→ Vestibular symptoms onset
- Headache may never be temporally associated with the dizziness

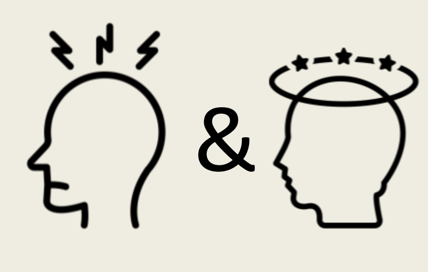
Exam (usually not necessary)

塞進去	把不是的丟掉

- NE fine
- Dx by Criteria
- Inner ear test battery WNL

Thakar et al., *J Laryngol Otol.*, 2001
Park et al., *Med Hypoth.*, 2010

Slides courtesy of Prof. SJ Wang VGHTPE

Temporal patterns of  & In VM

50% Headache → Vertigo

group A
with a free interval — 9 patients
without free interval — 6 patients
gradual shift — 71 patients

20% Vertigo → Headache

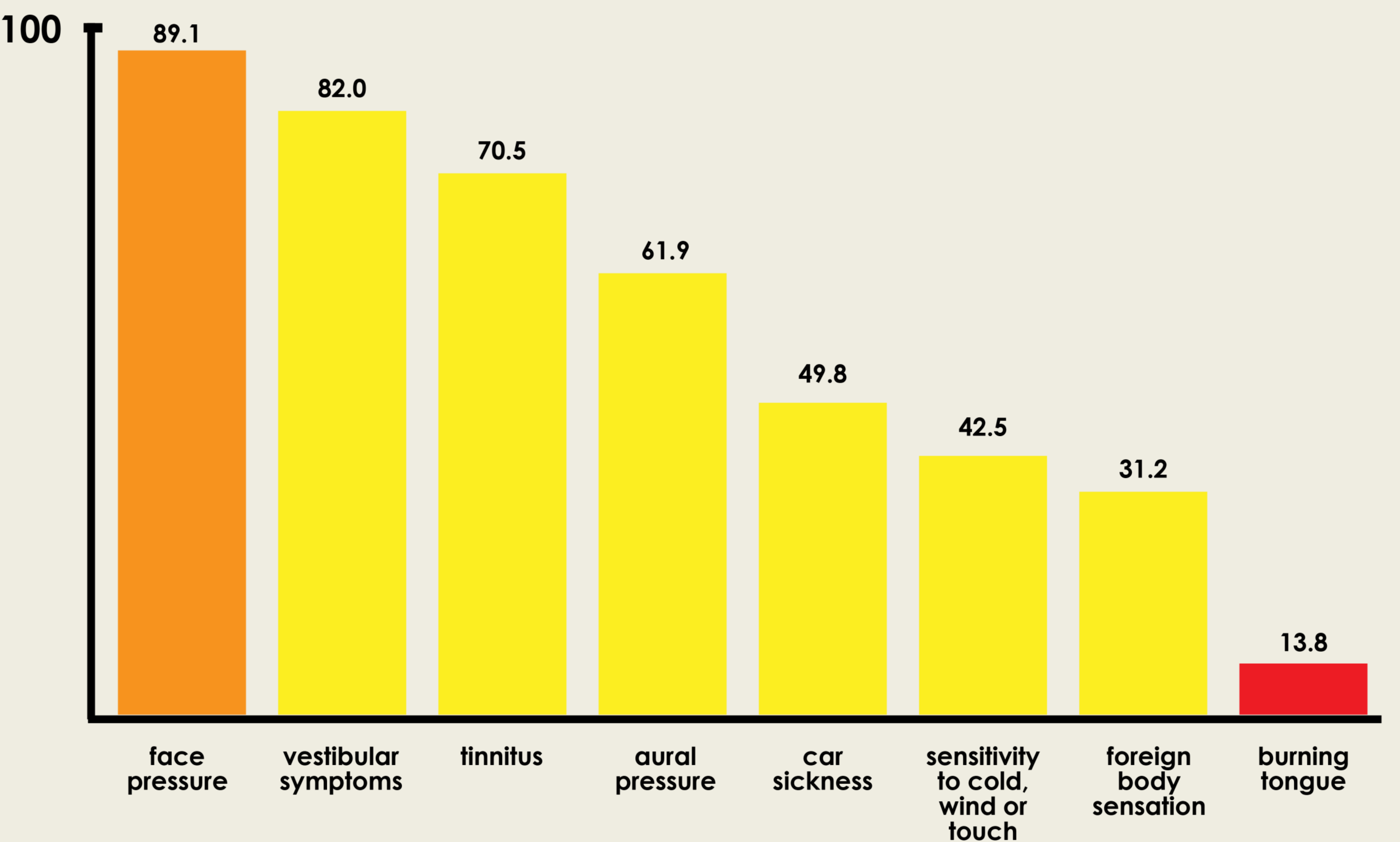
group B
gradual shift — 35 patients

30% Vertigo/Headache simultaneously

group C
occurred simultaneously — 30 patients
occurred simultaneously after a period of headache alone — 21 patients

= headache = vertigo = vertigo accompanied with headache

Yan M. et al. *Front. Neurosci.*, 2020



https://miosociety.org/

Diagnostic criteria for **VM** (ICHD-3 A1.6.6 & ICVD)

- ≧ 5 **moderate or severe vestibular symptoms**, lasting between 5 min - 72 hrs
- A current or past history of **migraine** 比較嚴格
- **≧ 50% of episodes** with ≧ 1 **migrainous features**:
  1. **headache** with ≧ 2 of the followings: **PUMA**
     a) unilateral location
     b) pulsating quality
     c) moderate or severe intensity
     d) aggravation by routine physical activity
  2. **photophobia and phonophobia**
  3. **visual aura**

Slide courtesy of Prof. Shih-Pin Chen TPEVGH

Diagnostic criteria for **probable VM** (ICVD only)尚未被收錄在國際頭痛分類中

- ≧ 5 **moderate or severe vestibular symptoms**, lasting between 5 min - 72 hr

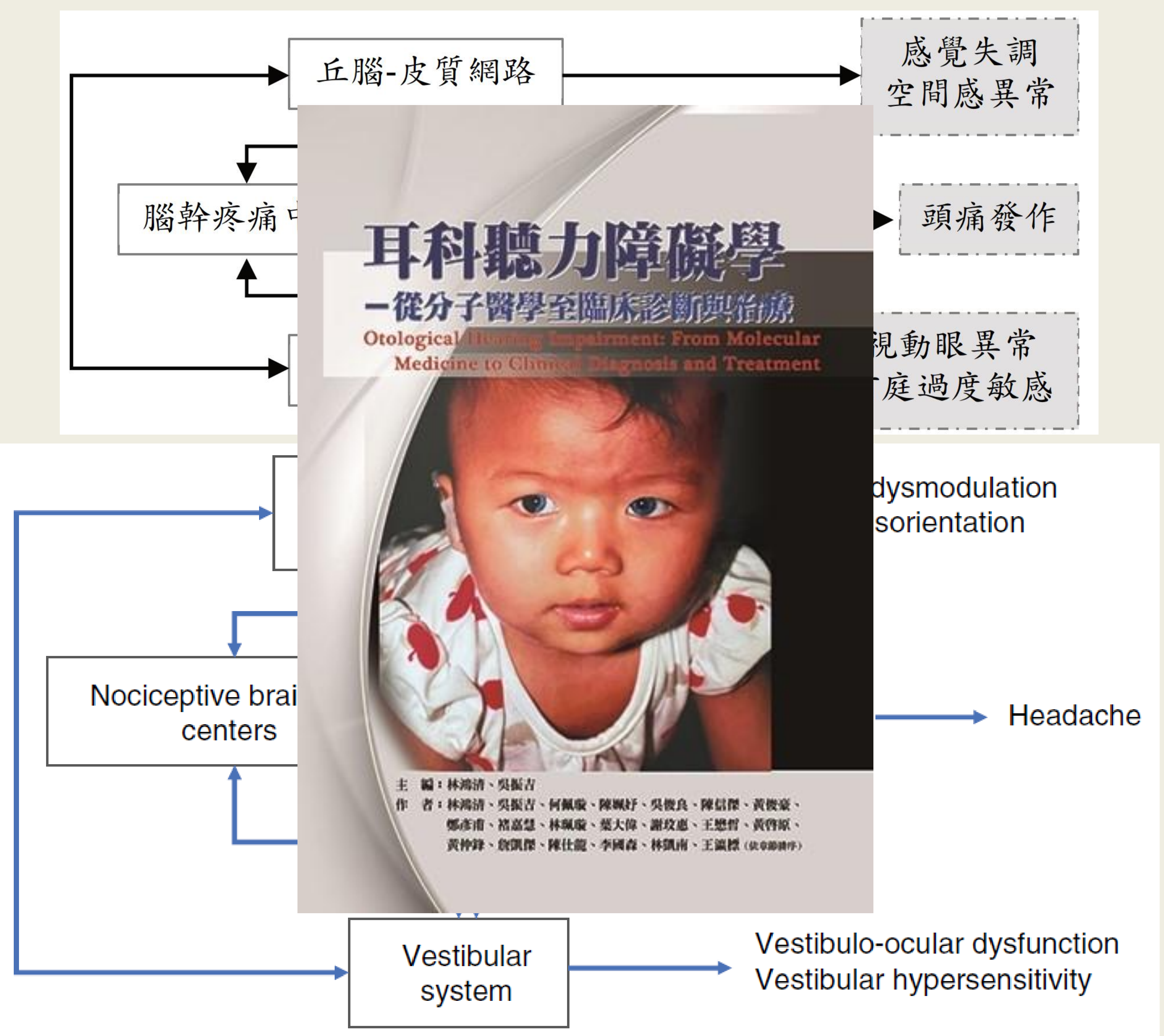
- A current or past history of **migraine** 不明顯頭痛的偏頭痛

OR

- ≧ **50% of episodes** with ≧ 1 **migrainous features:**
  1. **headache** with ≧ 2 of the followings: **PUMA**
     a) unilateral location
     b) pulsating quality
     c) moderate or severe intensity
     d) aggravation by routine physical activity
  2. **photophobia and phonophobia**
  3. **visual aura**

ICHD-3 (2018) & ICVD (2009)

Pathophysiology



Huang TC, Wang SJ, Kheradmand A. *Cephalalgia* 2020; 耳科聽力障礙學2023

D/D

- Mimic "super frequent but short" BPPV

  →resolved in hrs, freq recurrences; atypical positional nystagmus

  →migrainous symptoms during vertigo
- PPPD

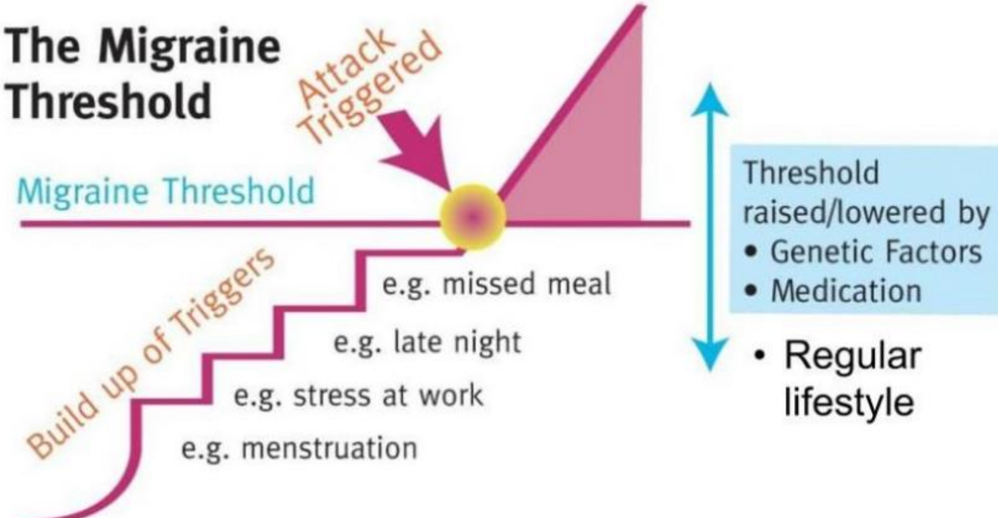
✪ TIA (Transient neurologic sign)→ NE, Hx, risk factors

✪ Newly onset or exacerbated headache

✪ Clustered attack no improvement in 72 hrs

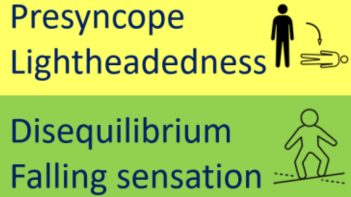
Treatment

- Non-pharmacological
  - Avoid triggerS
    - Lifestyle modification
    - Dietary adjustment
  - Vestibular rehab



- Pharmacological
  - Currently follow migraine Tx
  - Prophylaxis & abortive Tx
  - Lack of high-quality evidence

https://migrainecanada.org/



Case 2

Jennifer 30歲
兩個月前開始常常覺得頭暈, 浮浮的, 只有一次真的要昏倒, 眼前瞬間發黑, 雙耳耳鳴, 旁邊人講話聲音變小聲, 很遠

- X: No obvious trigger, unrelated to head posture or movement; 走去茶水間倒咖啡、站著跟同事聊天
- O: not sure
- Lasting seconds ~ minutes; 1-5 times/ day; N+V-

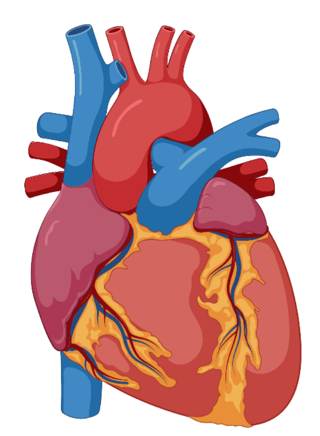
Digging deeper

- Past Hx: fainting in her youth, often with her MC
- Denied headache

Possible Dx? Presyncope, Orthostatic intolerance

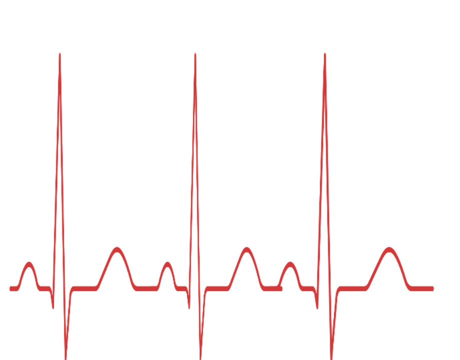
- Postural hypotension Lie down for a while
  Stand up, BP 1-2-3 min
  If within 3 mins, BP↓ > 20/10 mmHg

- POTS Postural Orthostatic Tachycardia Syndrome (less BP↓ but HR↑ >30 with discomfort)→ common form of OI in young, idiopathic



- An increase in heart rate of ≥ 30 bpm, or ≥ 40 bpm for those under age 19, within 10 minutes of standing from a supine position.

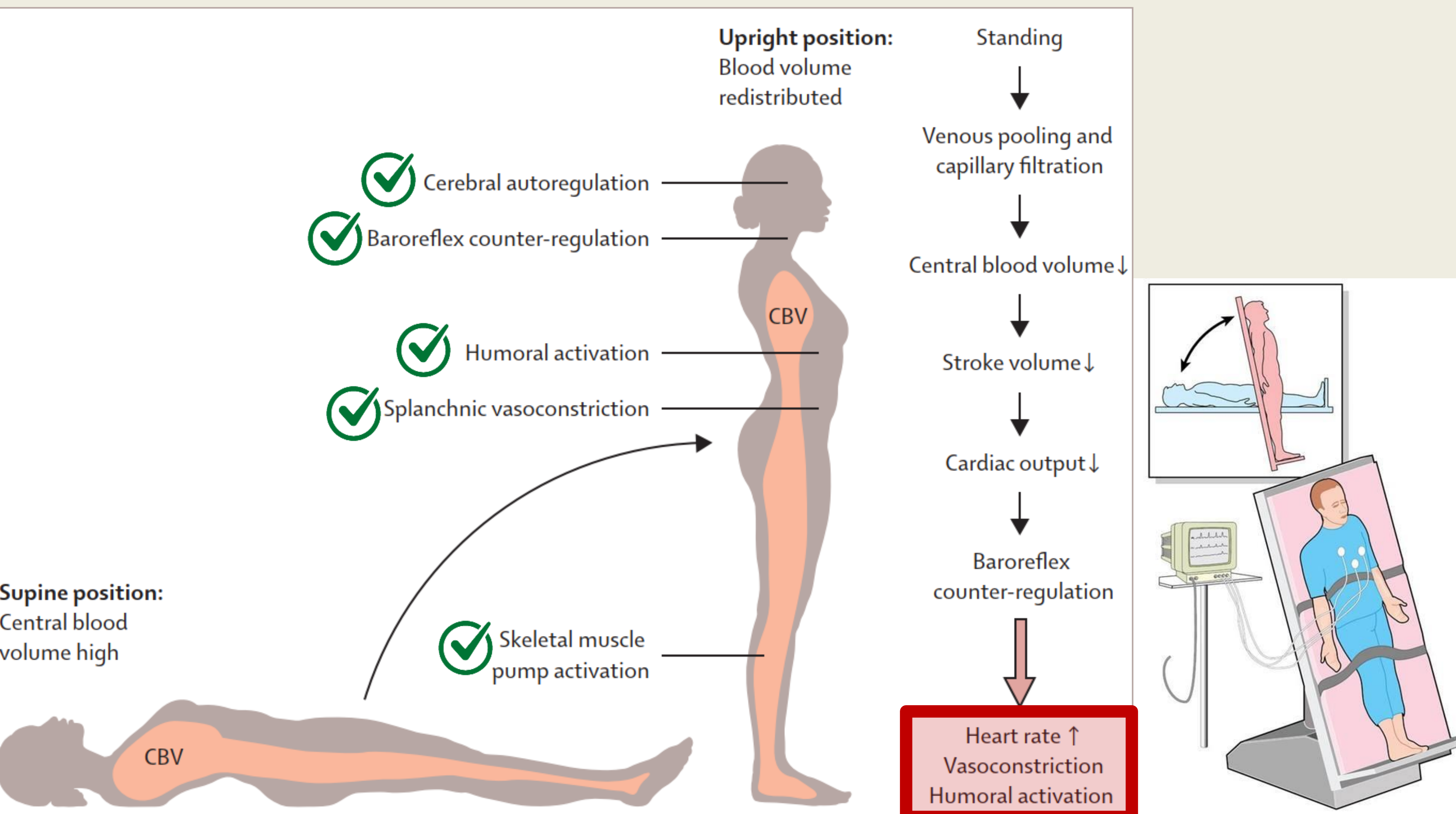
- Absence of orthostatic hypotension (a fall in blood pressure of ≥ 20/10 mmHg)



- Sustained tachycardia (> 30 seconds)

Frequent and chronic duration (≥ 6 months).

https://www.cureus.com



Lancet Neurol 2022; 21: 735–46

Exam

- Hallpike neg; NE normal
- Lying/ Standing BP
- Tilting table test

Phase	Description	Start [h:m:s]	End [h:m:s]
-	Start Measurement	00:00:00.0	00:01:33.4
1	Start Recording	00:01:33.4	00:34:32.9
-	NBP:94/62 HR82	00:01:56.4	---
-	Tilt-up, NBP:95/58, HR79	00:03:54.5	---
-	NBP:98/66 HR96	00:09:30.6	---
-	NBP:99/67 HR101	00:24:14.4	---
-	Tilt down, NBP:96/68 HR115	00:31:48.7	---
2	Isoproterenol 2 ug/min in	00:34:32.9	01:07:45.1
-	NBP: 96/68 HR93	00:35:02.3	---
-	tilting up, NBP:109/65 HR134	00:38:41.9	---
-	頭暈目眩 NBP:86/51 HR135	00:46:37.1	---
-	頭很晃 想打嗝	00:48:09.3	---
-	雙耳快聽不到 感覺快耳鳴	00:49:20.2	---
-	NBP:77/49 HR92	00:51:06.6	---
-	NBP:99/48 HR118	01:01:16.1	---
-	看東西霧霧的	01:01:49.3	---

Report:

Progressive BP ↓ from 109/65 to 86/51, HR ↑ from 134~135 bpm

8 minutes after tilting up.

Positive for *delayed* orthostatic hypotension (drug induced)

1.Posture Orthostatic Tachycardia Syndrome (POTS): Borderline
76 /min at supine position
91 /min 1 min after head up tilt
100 /min 3 mins after head up tilt
103 /min 14 mins after head up tilt and was unable to tolerate upright position
78 /min after reclining to supine position

2.Postural hypotension: No

Head up tilting (HUT) duration: 14 mins.
Doppler signal depth (mm): Left MCA: 58 , Right MCA: 45
*Resting MCA flow velocity (cm/s):
Left: 142 / 84 (mean: 103) Right: 114 / 64 (mean: 81)
*MCA flow velocity (cm/s) immediately after HUT:
Left: 112 / 60 (mean: 77) Right: 87 / 46 (mean: 60)
*Lowest MCA flow velocity (cm/s) after HUT:
Left: 109 / 64 (mean: 79) Right: 76 / 46 (mean: 56)
, while BP= 96 / 60 mmHg, mean BP= 73 mmHg at 14 mins of HUT
*MCA flow velocity (cm/s) immediately after reclining to supine position :
Left: 151 / 87 (mean: 108) Right: 110 / 66 (mean: 81)

Conclusion:
1. Immediate flow decrease: Left MCA: 25 % , Right MCA: 26 %
2. Delayed max flow decrease: Left MCA: 23 % , Right MCA: 31 %
3. Dizziness during HUT: Yes

--> Significantly decreased cerebral blood flow (>20%) immediately and after 10 mins of head up tilt

Report: Borderline POTS

Cerebral blood flow ↓ (>20%) immediate & after head up

Pathophysiology: Poor ANS response

- Too thin, dehydration, long standing
- Old age: Psychi med, diuretics, DM neuropathy, Parkinsonism

D/D 塞進去 把不是的丟掉

- Vasovagal syncope → Posture unrelated

✪ Hypoglycemia, E^-→ Hx

✪ Arrythmia→ palpitation, more sudden less premonitory symptom

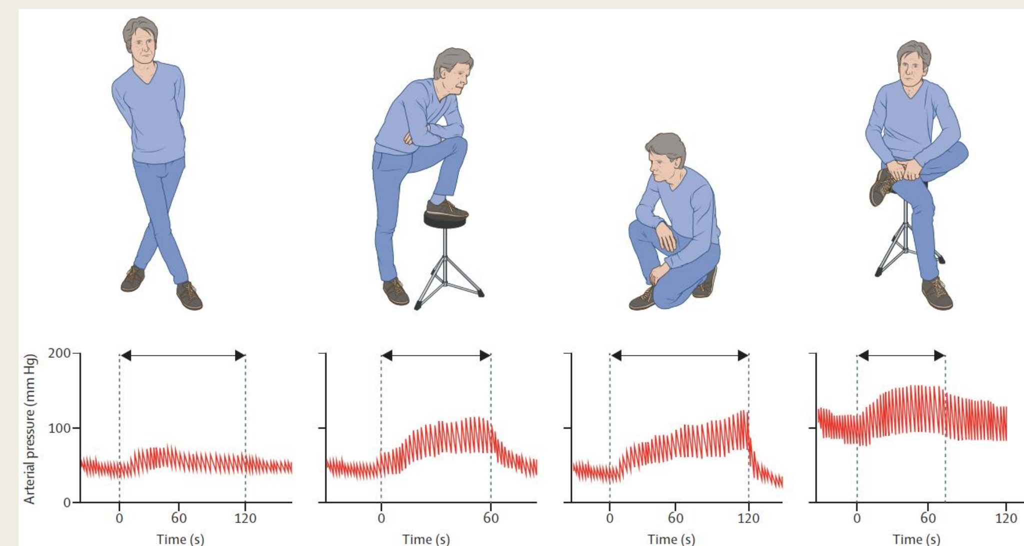
✪ Anemia, Acute blood loss

WATCH OUT!

J Am Coll Cardiol. 2019 Mar, 73 (10) 1207–1228

Treatment

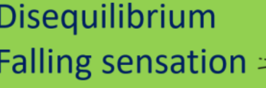
- Medication review
- Exercise
- Bolus water drinking
- ↑ Dietary Na intake
- Eating frequent small meals
- Physical countermanoeuvres
- Compression stockings



- Pharmacological interventions DO NOT restore normal baroreflex control (Midodrine, mineralocorticoid…..)

Lancet Neurol 2022; 21: 735–46

Presyncope
Lightheadedness



Non-specific

Case 3

Ken 79歲
之前因為蜂窩組織炎住院十天打抗生素, 好像是出院之後開始走路不穩, 覺得隨時要跌倒, 想扶著家具才安心

- X: stand up, walk, pee in the night
- O: while sit steadily, lie down
- Slight nausea, no vomiting nor headache

Digging deeper

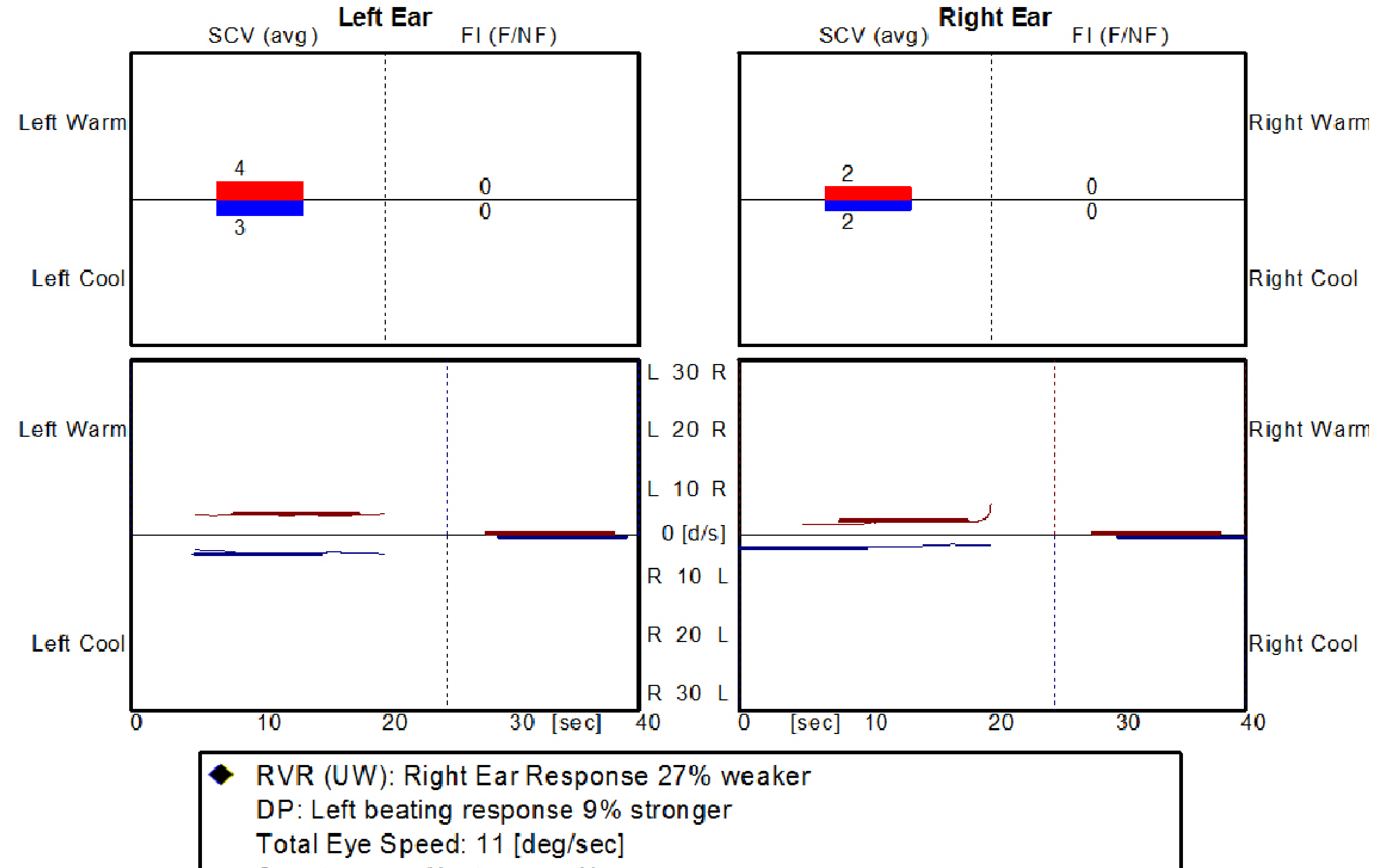
- Type 2 DM, HbA1c 8.9% under insulin
- Confirmed DM retinopathy
- HTN: Hydrochlorthiazide, Metoprolol
- IV Gentamicin

Possible Dx? Multisensory dizziness

- ↓ Inputs from >1 one sensory system:
  - Retinopathy
  - Bil vestibulopathy

Exam

- Hallpike neg
- Can not perform tandem gait, Mild saccadic pursuit; HINT: catch-up saccades to both R/L
- Carotid doppler: mild to moderate plagues+
- Caloric test: suspect bil hypofunction


Caloric Summary
Left Ear
SCV (avg)
FI (F/NF)
Right Ear
SCV (avg)
FI (F/NF)
Left Warm
Left Cool
Right Warm
Right Cool
4
3
0
0
2
2
0
0
Left Warm
Left Cool
Right Warm
Right Cool
L 30 R
L 20 R
L 10 R
0 [d/s]
R 10 L
R 20 L
R 30 L
0
10
20
30 [sec]
40
0 [sec] 10
20
30
40
RVR (UW): Right Ear Response 27% weaker
DP: Left beating response 9% stronger
Total Eye Speed: 11 [deg/sec]
Spontaneous Nystagmus: None

Pathophysiology

- Balance: accurate & coordinated inputs from
  - When ≥ 2/3 systems impaired→ Balance
- Insidious onset, Constant
- Associated imbalance may be prominent

D/D

- Hx DM, frequently associated with multifactorial dizziness → ANS neuropathy→ postural hypotension
- Possible side effect

Minor stroke

【P】--------- 醫令名稱 ---------	劑量	---服法---	總量
(慢)40mg Atorvastatin(TULIP*)	1	QDPM	28
√(慢)管4_ZOLPIDEM* 10mg(zolpide	1	QHS	28
(慢)Famotidine 20mg (ULSTOP*)	1	BID	56
√(慢)管4_TRAMACET*(ACT 325mg/Tr	1	TID	84
(慢)Isosorbide dinitrate 10mg(	0.5	TID	42
(慢)NOBAR* 5 mg(amlodipine) ta	1	QD	28
(慢)Azilsartan Medoxomil(EDARB	1	QD	28
√(慢)管4_BROMAZIN*(Bromazepam)	1	HS	28
(慢)Sennoside 20mg(Through*)	2	QHS	56
(慢)MAGNESIUM OXIDE*(MgO) 250m	1	TID	84
(慢)DIPHENIDOL* 25mg(diphenido	1	TID	84
SANYL* 50mg(nicametate citrate	1	TID	84
ALLEGRA* 60mg(fexofenadine) ta	1	BID	14
外用Rinderon* VA Cream 5gm	1	BID	1

Treatment

Improve vision

Avoid walking on uneven ground or in low light circumstances

Modify medications

Keep active; Vestibular rehab

with peripheral vestibular effects

Aminoglycoside, Loop diuretics

Vancomycin, Erythromycin

Antineoplastics, Quinine, NSAIDs

with central vestibular or central nervous effects

Quinolone, Tetracycline

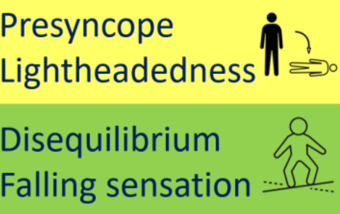
Anti HTN (α-adrenergic blocker, β-blocker, Diuretic, CCB)

Mood/ Hypnotics (BZD, TCA, SSRI, SNRI, MAOI……)

Levodopa

Vestibular suppressants

Case 4



Suzan 78歲
六周前開白內障之後覺得「整天暈暈」, 以前沒有這樣。
最近兩周已稍微改善, 但依然時不時覺得眼前東西晃晃

- X: No obvious trigger. Constant lightheadedness with slight environmental motion
- O: While sleep
- Oph Dr: Surgery OK. Operated eye 20/20; the other eye 20/200, with a noticeable cataract.

Digging deeper

- Type 2 DM, good control

Possible Dx? Ocular dizziness

- Dizziness can be caused by refractive changes

Exam

- NE fine, BP 130/76 PR 72
- Carotid, TCCD (Transcranial color Doppler sonography) WNL

Pathophysiology

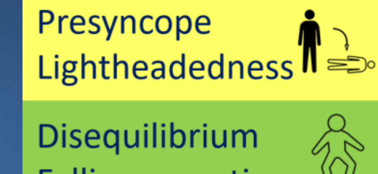
- Changes in refraction necessitate adaptation of the VOR in order to calibrate movements
  - Ocular dizziness: when refractive change exceeds the individual's ability to adapt VOR
  - Aging: VOR adaptation slower, becomes less effective

D/D

- DM Hx, associated with multifactorial dizziness → retinopathy, peripheral neuropathy, ANS neuropathy
- Cervical dizziness→ "constant" dizziness implies a cause that does not change over the course of a day

Treatment

- Tx ophthalmic problem as possible
- Vestibular rehab Exercise



Case 5

Elaine 21歲
小學時比較常昏倒。四個月前有一次喝醉酒被送去急診, 之後就一直覺得整天都沒有酒醒, 有時像坐船有時像地震, 嚴重的時候有幾秒鐘好像要轉起來

- X: 坐在教室看白板、站在收銀機前、低頭找錢、忽然轉頭、太快站起來、勞累、睡不好
- O: not sure……?
- Numbness, nausea, palpitations, cold sweating, weakness, dyspnea, felt like fainting

Digging deeper

- Migraine+ aura-, EVE works
- Hx: Bipolar since senior high; few panic attacks
- Can fall asleep, easy arousal
- School daytime, part-time job

管 4_Lorazepam 2mg(ANXICAM*)	1	QHS
管 4_RIVOTRIL* 0.5mg(Clonazepam)	1	QHS
管 4_Estazolam 2mg (Eszo*)	1	QHS
LATUDA* 40mg(lurasidone) tab	1	QHS
MOCALM* (Flupentixol/Melitracen)	1	QDPRN

Possible Dx? Could be anything

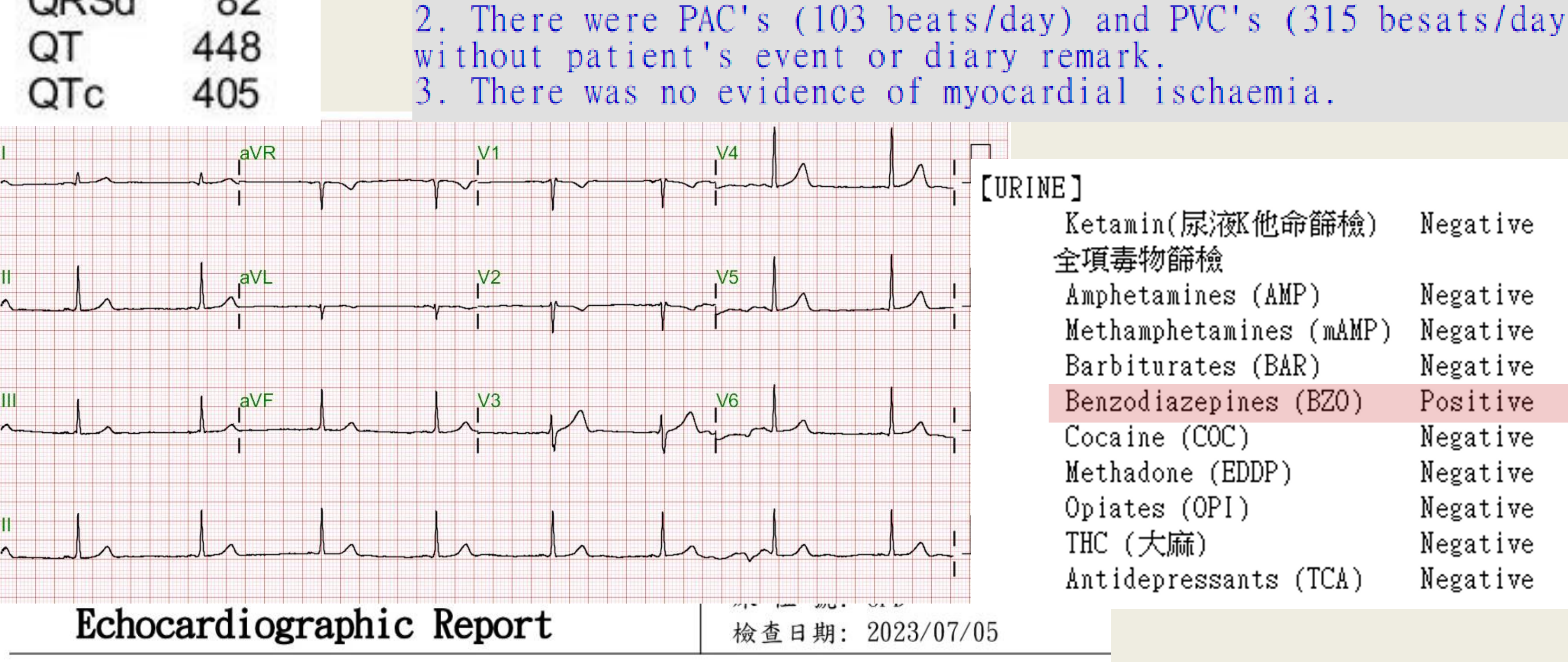
PPPD, Vasovagal, Postural hypo, Psychogenic, VM, Cardiogenic, Meds

- 60% of patients with panic attacks will have dizziness
- Frequently associated with stress

Exam 塞進去 把不是的丟掉

- 168cm 45Kg, BP 98/68 PR 80
- Hallpike neg; NE normal
- ER: Hb 11.8; Brain CT neg
- EKG brady
- Enzyme neg; Holter neg, Cardiac echo mild MR TR

HOLTER
開單日期:2023/05/12　　　　檢查日期:2023/07/20
Conclusions
1. Basically, NSR with HR ranging from 43 (06:09:33) to 155 (12:26:34) bpm was noted with mean HR 78 bpm.
2. There were PAC's (103 beats/day) and PVC's (315 besats/day) without patient's event or diary remark.
3. There was no evidence of myocardial ischaemia.



心律	49
PR	117
QRSd	82
QT	448
QTc	405

【URINE】

Ketamin(尿液K他命篩檢)	Negative
全項毒物篩檢	
Amphetamines (AMP)	Negative
Methamphetamines (mAMP)	Negative
Barbiturates (BAR)	Negative
Benzodiazepines (BZO)	Positive
Cocaine (COC)	Negative
Methadone (EDDP)	Negative
Opiates (OPI)	Negative
THC (大麻)	Negative
Antidepressants (TCA)	Negative

Echocardiographic Report

檢查日期: 2023/07/05

Valves

- Redundance and prolapse of anterior mitral leaflet into LA more than 2mm below mitral annulus

Conclusion

- Preserved global contractility of left ventricle
- Normal diastolic function of left ventricle
- Mild mitral regurgitation
- Mild tricuspid regurgitation
- Mild pulmonary hypertension
- Estimated systolic pulmonary artery pressure is 25.6 mmHg

D/D

- PPPD
- Might mixed with Panic, other mood disorders
- VM
- Vasovagal syncope, Postural intolerance
- Medication, Drugs

Treatment (Actually very little we can do)

- SSRI, SNRI
- Vestibular rehab
- Education

Presyncope Lighttheadedness
Disequilibrium Falling sensation
Non-specific

Case 6

Beatrice 55歲
三年前出車禍, 帶了頸圈一個月, 陸陸續續覺得頭暈脖子緊,
沒有旋轉眩暈, 但總是覺得走路不踏實; 還不至於跌倒

- X: Head turning esp head up; arises in the morning, not enough sleep, work too much
- O: not sure; seemed slightly better while lying down

Digging deeper

- Chronic nuchal pain, stiffness
- Headache (non-throbbing, scanol works)

Possible Dx? Might be cervical vertigo

- Lightheadedness, imbalance, unsteadiness ↑with neck movements or neck pain
- Injury/ Dysfunction: Whiplash cervical/ Spondylosis

Exam

- Hallpike neg; NE normal
- Pain to palpation throughout neck muscles, bil TMJ
- Relatively limited neck ROM

Pathophysiology: Proprioceptive-vestibular mismatch

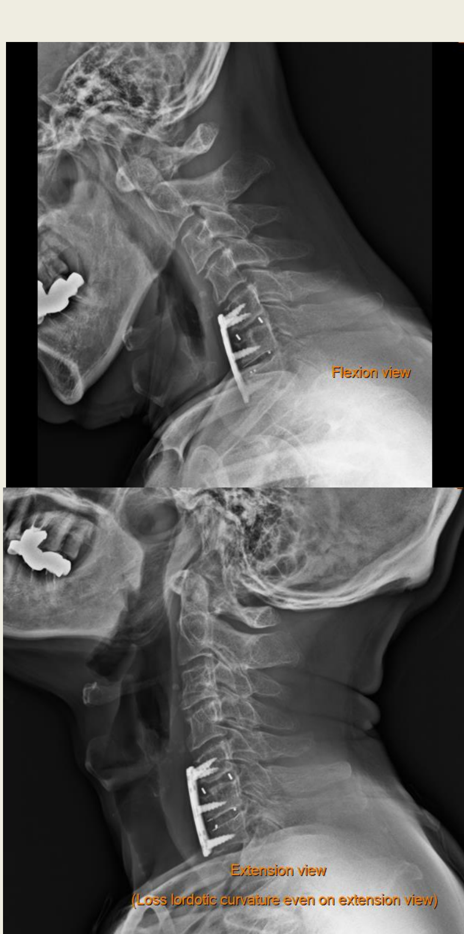
- Proprioceptive input from cervical m. spindles altered by pain ↔ does not agree vestibule input signals
  來自頸部肌肉spindle的本體感覺被疼痛訊號alter, 而無法agree with前庭輸入

D/D 塞進去 把不是的丟掉

- Dx by exclusion is the rule
- Bil VP, VM, Psychiatric, Migraine, PPPD
- Cervical Myelopathy, Alignment

✪ Neck a. (dissection, stenosis)

✪ Anemia



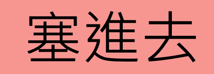
Treatment

- Physiotherapy directed towards the painful muscles
- Aerobic conditioning
- Muscle relaxants
- Amitriptyline

Take Home Messages

1. It takes TIME……Ask specific & quick questions

   → To fit the patient into one of the categories

   - True vertigo is easier 

   - Non-vertiginous dizziness 把不是的丟掉

2. Do NE (Gait, EOM, HINT)

   → Assess risk factors always!

   → Do follow if you feel uncomfortable

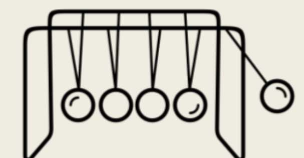
3. Multiple causes in the elderly
4. About 15~30% undiagnosed

Still too much we don’t know

- Migraine, POTS, OSA
- Perimenopausal
- Idiopathic intracranial hypotension
- Subclavian steal syndrome
- Post concussion

Still too much we don’t know

自律神經失調

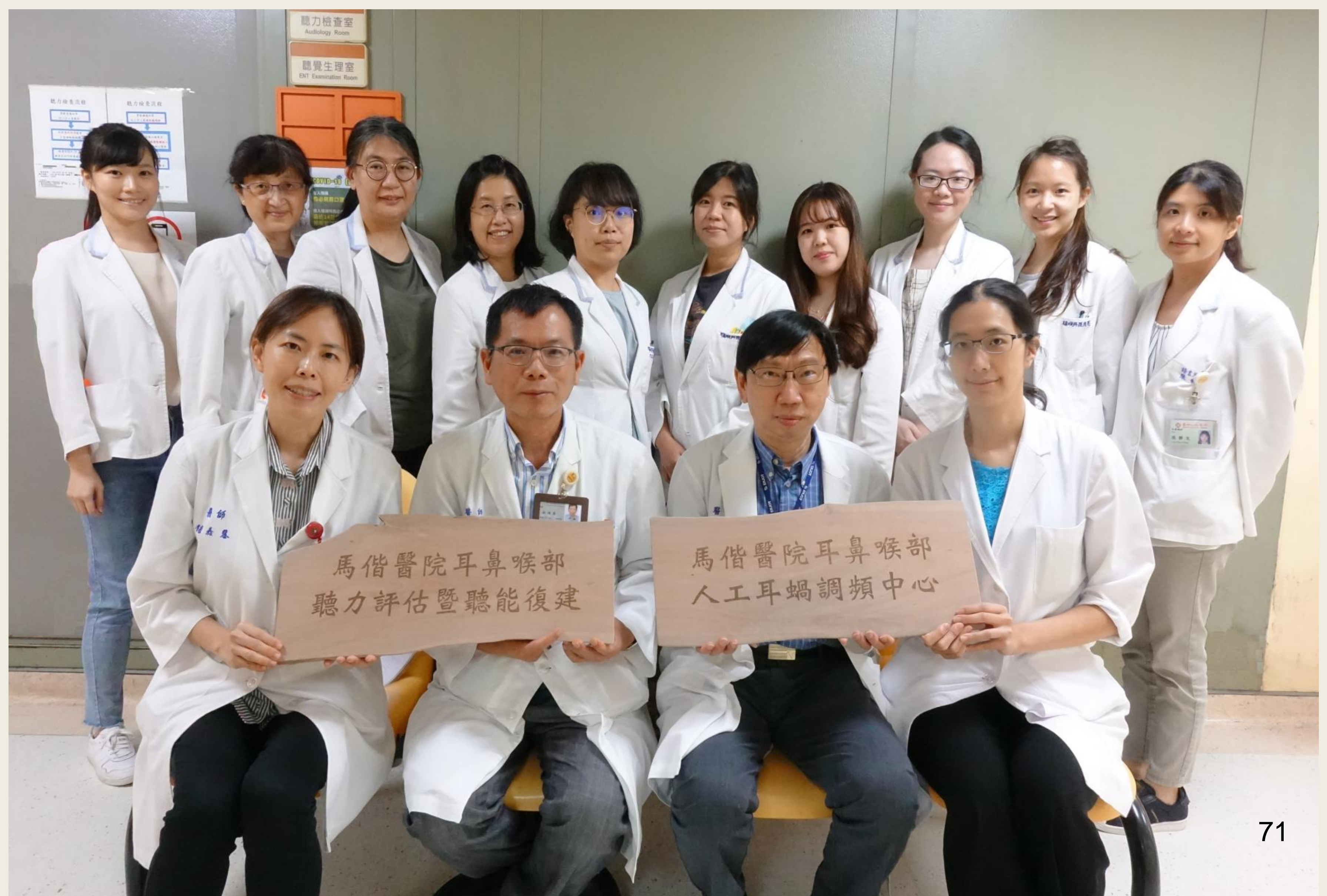


- 是原因/是結果
- 並非單一疾病，也沒有固定的診斷方式。目前認定比較正確的診斷標準可透過以下三種檢查
  - 心律變異率HRV
  - 呼吸時呼氣中CO2濃度
  - 姿勢改變時之BP

以精神症狀出現者		
症狀	不安感、集中力低下、焦慮、記憶力低下	
症狀出現於身體各部位者		
症狀	手	麻痺、冷涼、潮紅、雷諾症狀、感覺異常
	足	麻痺、冷涼、潮紅
	頭	頭痛、頭重
	眼	眼濕、眼乾、眼睛疲勞、眼睛睜不開、眼花
	口	口渴、口腔痛、味覺異常
	喉	異物感、微刺感、壓迫感、喉嚨塞住
	呼吸器	胸悶、缺氧感、呼吸困難
	消化器	腹鳴、便秘、下痢、放屁、噁心、腹部膨脹感、物塞食道感
	泌尿器	頻尿、殘尿感、不易排尿
	耳	耳鳴、耳塞感
	心臟、血管	心悸、眩暈、頭部充血、胸口壓迫感、冷涼下血壓會變動
	生殖器	陽痿、生理不順、外陰部搔癢
	皮膚	乾燥、多汗、搔癢
	肌肉、關節	肩痛、不能使力、關節乏力
以全身症狀出現者		
症狀	眩暈、微熱、失眠、嗜睡、多夢、淺眠、說夢話、漂浮感、無食慾、苦於早起 全身濕熱、容易疲勞、全身倦怠感	

(圖片來源／中華民國自律神經失調症協會)

馬偕團隊



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