



# 第四屆眩暈讀書會

## Central Positional Vertigo

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高醫附院 耳鼻喉部

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# Case 1

**21Y/M, ENT OPD, 2013/07**

- **Chief Complaint:** Vertigo attack with short duration when changing head position off and on for one year
- **Present Illness:** No specific otogenic and neurological findings
- **Past History:** DM(-), HTN(-), Hyperlipidemia(-)



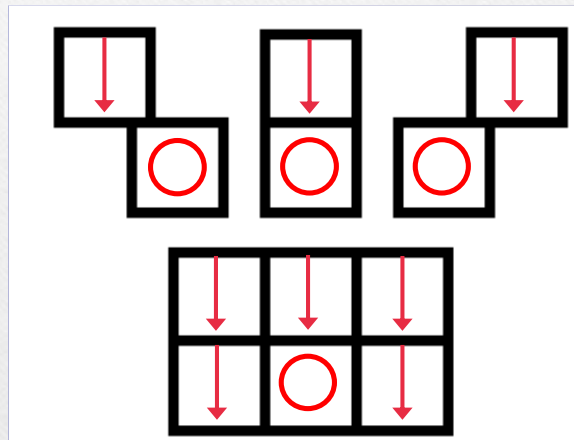
# Physical Examination

## Down-beating nystagmus

Dix-Hallpike test

Stenger test

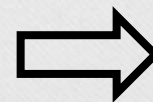
Head roll test



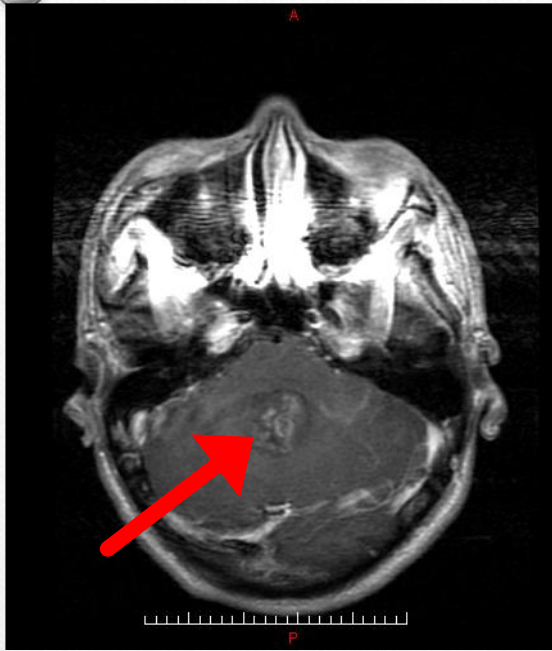
Positioning

Positional

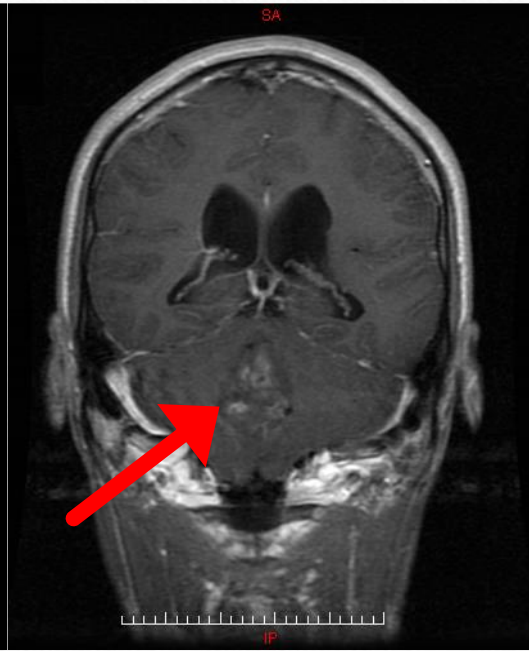
Down-beating nystagmus  
Highly suspect central lesion  
induced vertigo  
(Posterior cranial fossa)



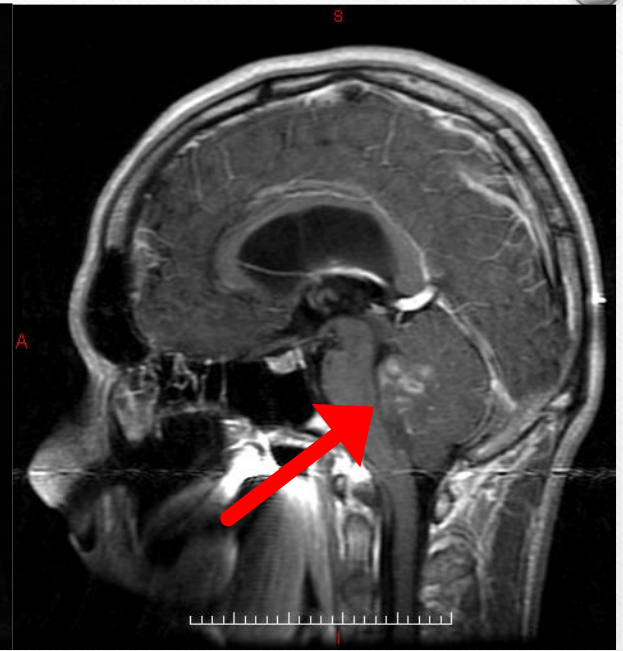
Brain MRI



Axial



Coronal



Sagittal

**Brain MRI (T1W + contrast):**

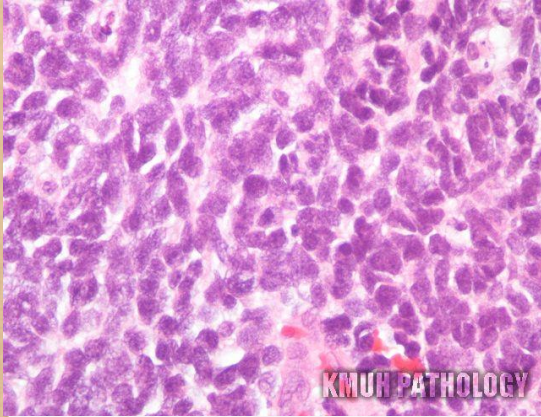
A mass lesion (2.7x2.5x2.8cm) is noted in the 4th ventricle with heterogeneous component.



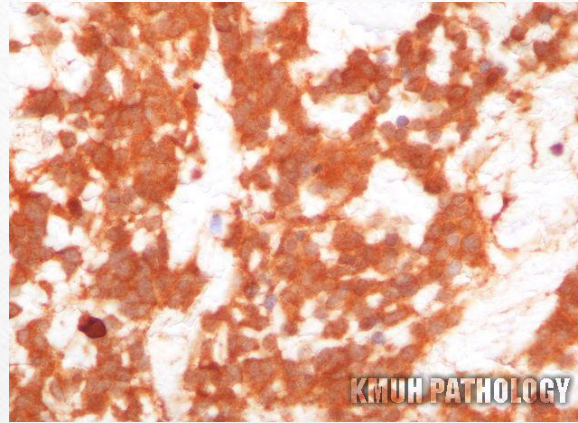
# Diagnosis & Treatment

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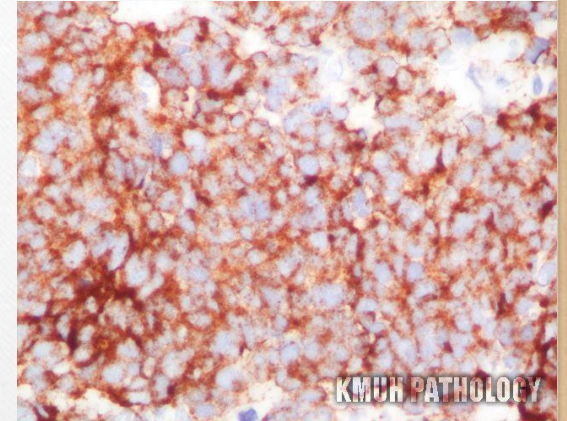
- **The fourth ventricular tumor with Obstructive hydrocephalus**
  - Refer to NeuroSurgeon
  - Post Suboccipital craniotomy + tumor removal with microscope and navigator + right side EVD and ICP + cranioplasty + free facial flap on 2013/08/14



H&E 400x



NSE(+)



Synaptophysin(+)

## Pathology:

Cerebellar vermis originated medulloblastoma invasion to 4<sup>th</sup> ventricle (T4M3,WHO grade IV)



## Case 2

**22Y/M, ENT OPD, 2014/03/04**

- **Chief Complaint:** Acute onset of vertigo with persistence for 1+ weeks
- **Present Illness:** No specific otogenic and neurological findings
- **Past History:** DM(-), HTN(-), Hyperlipidemia(-), admitted to 他院 for 1 week

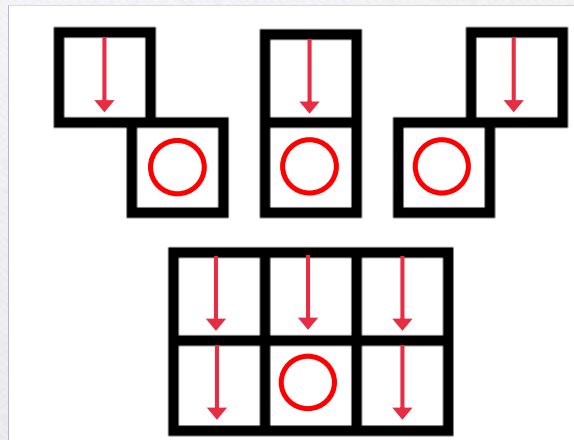
# Physical Examination

## Down-beating nystagmus

Dix-Hallpike test

Stenger test

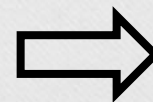
Head roll test



Positioning

Positional

Down-beating nystagmus  
Highly suspect central lesion  
induced vertigo  
(Posterior cranial fossa)

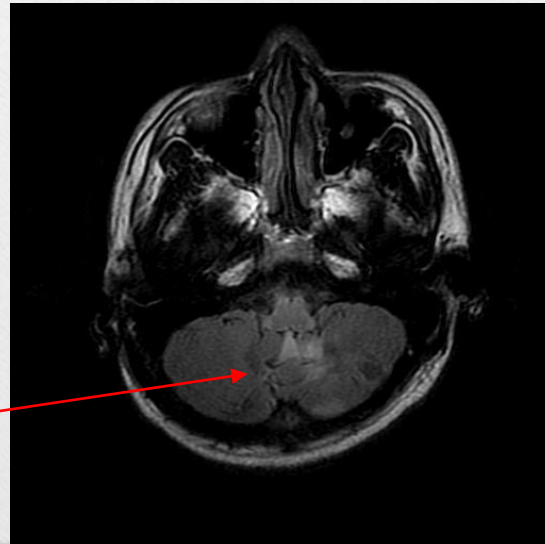
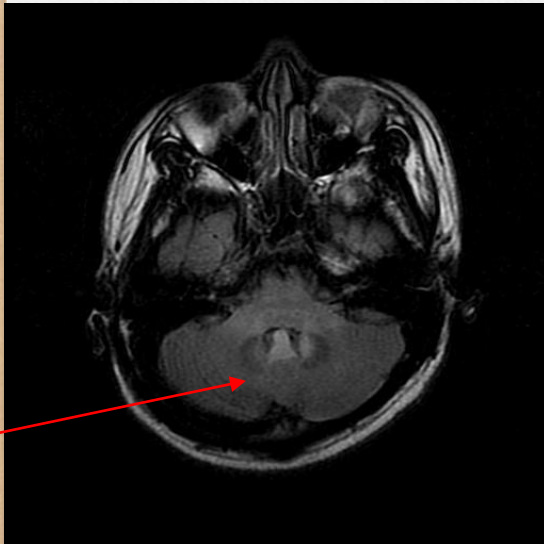
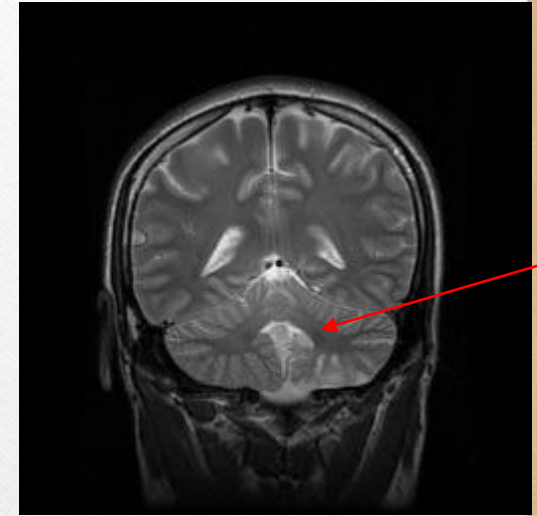
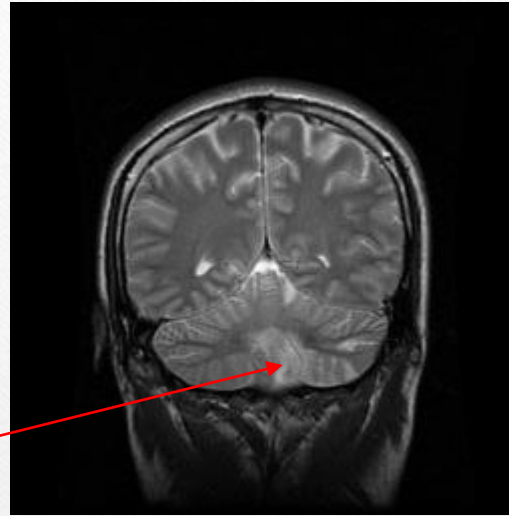


Brain MRI



## Impression:

1. Acute/subacute infarctions in the cerebellar vermis, left cerebellar hemisphere and tonsil.
2. Old infarcts in the bilateral cerebellar hemispheres.



# Diagnosis & Treatment

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- **Subacute infarctions in the cerebellar vermis, left cerebellar hemisphere and tonsil**
  - Refer to Neurologist

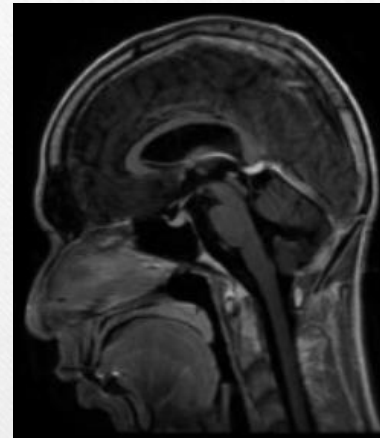


# Brief Summary

- **Case 1:** 21y, M → Postural positional nystagmus →  
Cerebellar vermis medulloblastoma with 4th Ventricle compression



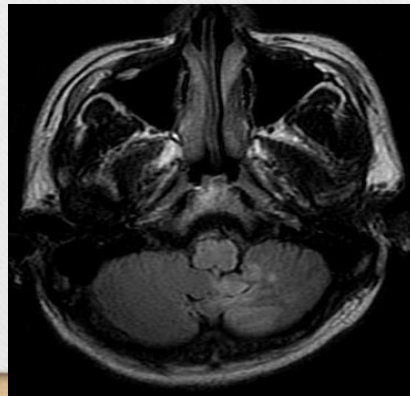
HEMA  
OPD F/U  
→



2013

2020

- **Case 2:** 22y, M → Postural positional nystagmus →  
Cerebellar infarction at vermis, left cerebellar hemisphere and tonsil



NEURO  
OPD F/U  
→

Improved dizziness

2014

2021

- 如何由以上兩例初步的臨床檢查,而高度懷疑病人可能有中樞型病變誘發之眩暈症,尤其在缺乏傳統神經學症狀之時.
- 以下情況,要高度懷疑中樞型病變誘發之眩暈症:

臨床症狀:

1. 持續性眩暈
2. 持續性嘔吐
3. 持續性自發眼振  
(超過24小時)

臨床檢查:

1. 垂直性眼振
2. 方向變換性自發眼振
3. 辨距不良(ENG)
4. 視覺抑制消失(ENG)
5. 異常眼球運動



- 這兩個病例的臨床表現和檢查結果，  
臨床上被稱為  
Malignant Paroxysmal Positional Vertigo  
(MPPV)

# Malignant Paroxysmal Positional Vertigo (MPPV)

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- This type of positional vertigo is sustained by the action of intracranial lesions that mimics the clinical aspects of BPPV.
- Position–induced nystagmus: **various morphology, not exhaustible, no fatigability.**
- An insidious percentage of paroxysmal positional vertigo appears to be intractable with canalith repositioning maneuver (CRM) and is not self-limiting.



- The mechanism of intracranial lesions causing positional vertigo may be different, depending on the location of the lesion.
- Direct mechanical traction or compression to the vestibular nerve or direct vestibular nucleus stimulation by
  1. Tumor mass (benign or malignant)-----Case 1
  2. Mass effect-----Case 2

(Auris Nasus Larynx. 2012)

- Four main properties may suggest a MPPV:
  1. Modification of the nystagmus characteristics after several diagnostic maneuvers done to evaluate BPPV
  2. Presence of associated symptoms that are uncommon in BPPV
  3. Any previous history of BPPV resolved by CRM
  4. Failure of several CRM and persistence of symptoms and signs for more than one month

(Auris Nasus Larynx. 2012)

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- Diagnostic maneuvers: Head shaking test, Dix–Hallpike, McClure
  - Uncommon symptoms in BPPV: persisting disequilibrium, headache, hemifacial paresthesia or facial nerve palsy, unilateral tinnitus, unilateral aural fullness, unilateral hearing loss and previous episodes of SSNHL



- **HINTS** test can be performed in patients who has continuous vertigo and suspected stroke
  - **H**ead **I**mpulse test: eyes remain focused on object (VOR)
  - **N**ystagmus: fast phase change direction, vertical nystagmus, abnormal nystagmus...etc
  - **T**est of **S**kew: vertical disconjugate gaze
- CT: misses 60~90% of acute ischemic strokes in the brainstem and cerebellum.
- MRI: is more reliable than CT, but still misses 15~20% of posterior circulation stroke in early period. (< 48hours after symptom onset)
- HINTS: 99% sensitive when performed by an experienced physician. (< 48hours after symptom onset)

# HINTS

Stroke

JOURNAL OF THE AMERICAN HEART ASSOCIATION



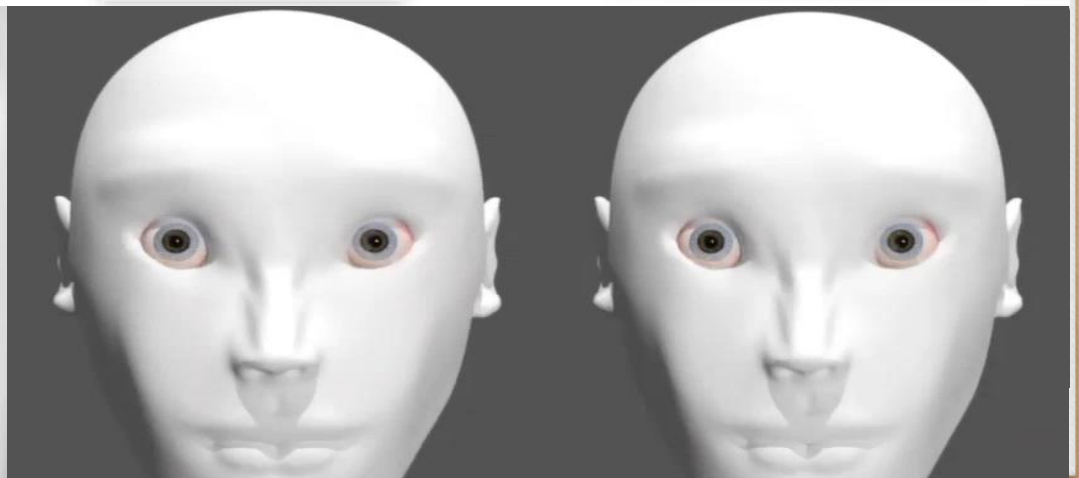
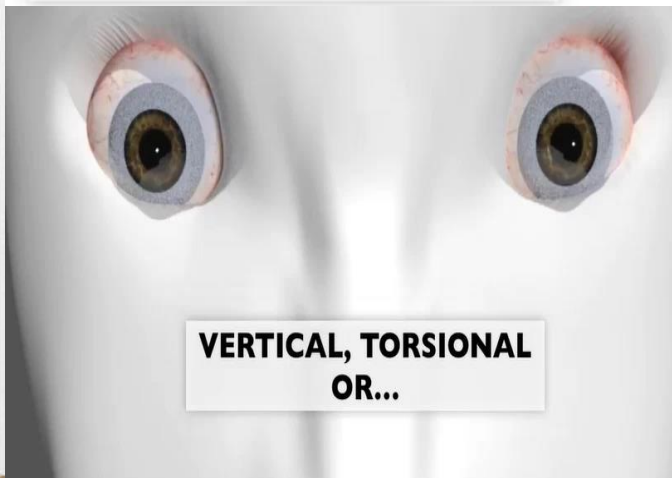
**HINTS to Diagnose Stroke in the Acute Vestibular Syndrome : Three-Step Bedside Oculomotor Examination More Sensitive Than Early MRI Diffusion-Weighted Imaging**

Jorge C. Kattah, Arun V. Talkad, David Z. Wang, Yu-Hsiang Hsieh and David E. Newman-Toker

**NON VESTIBULAR  
NYSTAGMUS**

**NORMAL  
HIT**

**SKEW  
DEVIATION**





No diagnostic delay  
(for life-threatening intracranial lesion)

# Take Home Messages

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- If the patients have prolonged vertigo, persistent spontaneous nystagmus
- If the patients have abnormal nystagmus from positioning test and positional test
  - Do HINTS(3-step oculomotor examination )
  - Highly suspect central lesion-induced vertigo (posterior cranial fossa)
  - Immediate Brain MRI (Do not hesitate, even in young aged patient)



# References

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