The Pearl Symptoms/Sign of Acute Headache at ED

奇美醫學中心
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Therapeutic Phases *of* Migraine

		Pre-Headache: Prodrome	Headache: Aura	Headache: Mild	Headache: Moderate	Headache: Severe	Post-Headache: Rescue	Post-Headache: Postdrome
Triptans	Oral Nasal	+/++		++++	+++	++		
Subcut Triptan					++++		++/+++	
OTCs	ASA + Acetaminophen + Caffeine			++				++
NSAIDs		+		++				++
Isometheptene				++				
							++	
Thermal + Relaxation Training								

藥物介入時機

Cortical spreading depression
皮質擴散抑制

The rating of specfic therapies used during different phases of migraine. Ratings range from +, somewhat efficacious, to ++++, highly efficacious.

Endorsed by the National Headache Foundation

Tension-type Headache or Migraine

Aura

Vomiting

Aggravated by Activity

Tension-Type

(輕/中)疼痛嚴重度(中/重)

Migraine

Cluster HA

- **Acute**
  - **tryptans (Imigran/ Rizatan)**
    - **74% effective within 15 min**
    - **Nasal spray may be more effective**
  - **Oxygen (100% O2, high flow volume, 7-12L)**

病人需求？
醫療成效？

適時的衛教是必要的

Which One Is Functional?

1

2

The Migraine as a Devil's act, 19th Century - France.

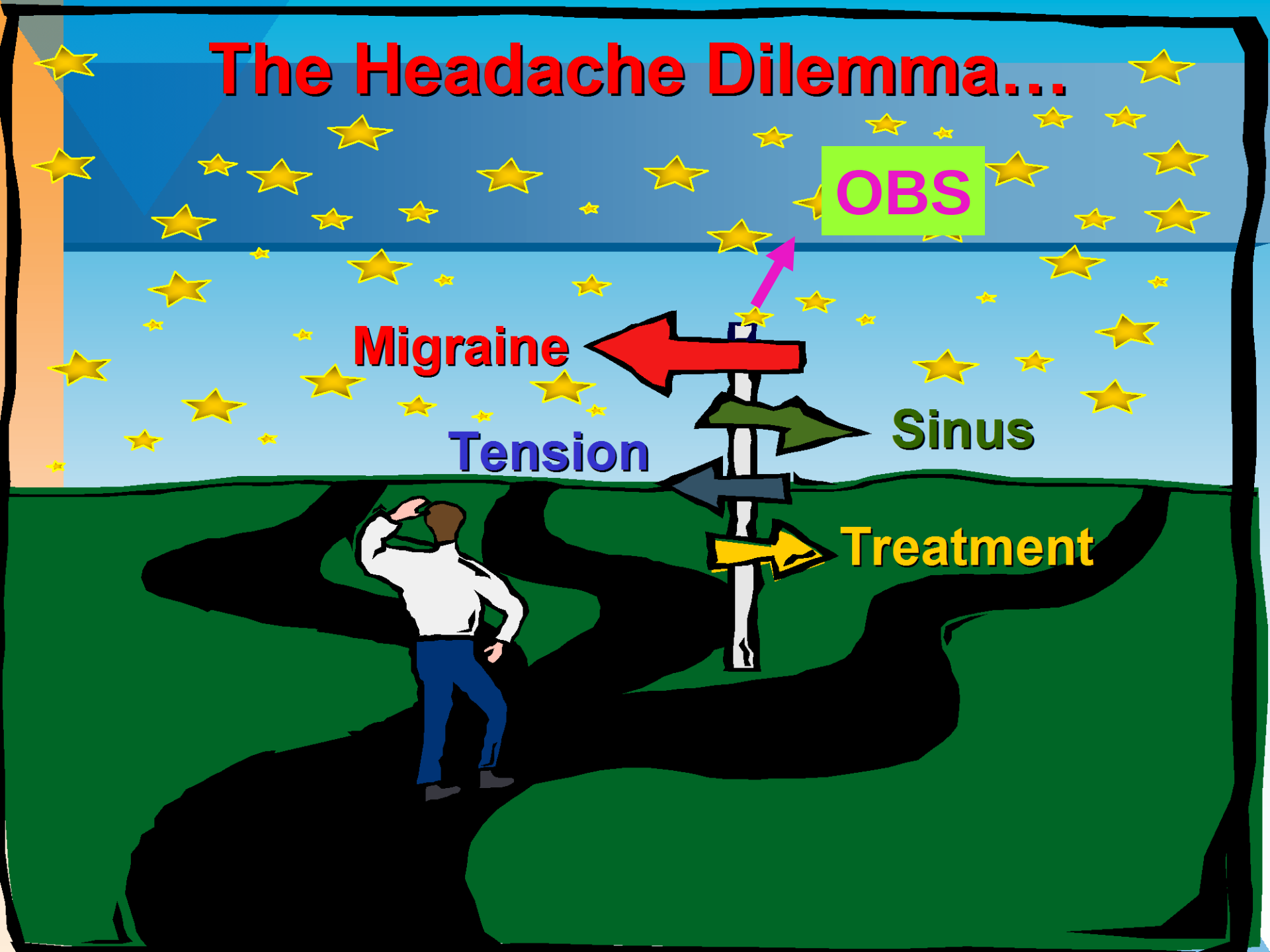
3

Cranial neuralgia

Cranial Neuralgias-quick, fleeting, often shock like episodes caused by inflammation of nerves in upper neck or head

- TN-severe facial pain along trigeminal nerve + certain characteristics
- Occipital-lancinating pain, + Tinel's over nerve and decreased sensation on ipsilateral occipital side

- **Na-channel blocker: carbamazepine**
- **Ca-channel blocker: pregabalin, gabapentin, flunarizine**

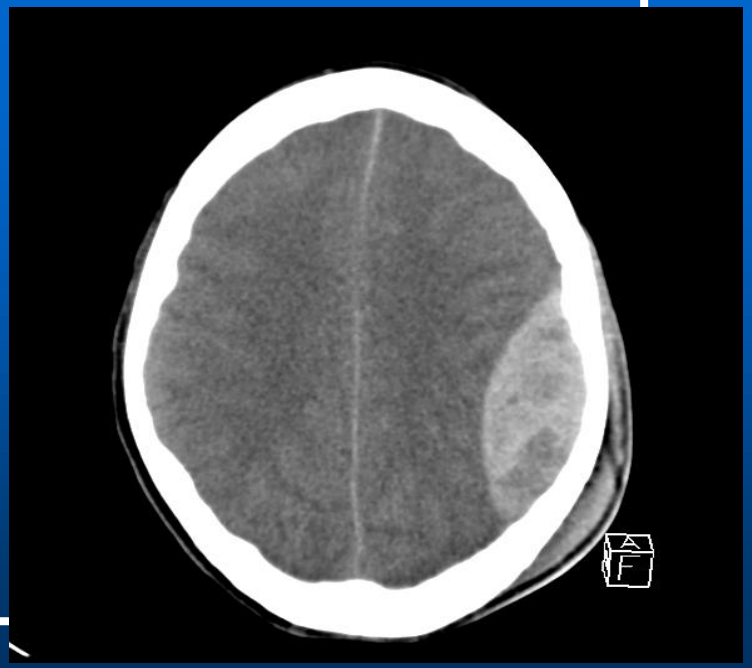

The Headache Dilemma…
OBS
Migraine
Sinus
Tension
Treatment

器質性頭痛Organic headache (pearl symptoms)

- Midnight or early morning headache
- Associated with Seizure, neck stiffness, focal neurological signs..
- Headache with LOC
- Headache pattern change
- Thunderclap headache (雷擊性頭痛／shower HA)

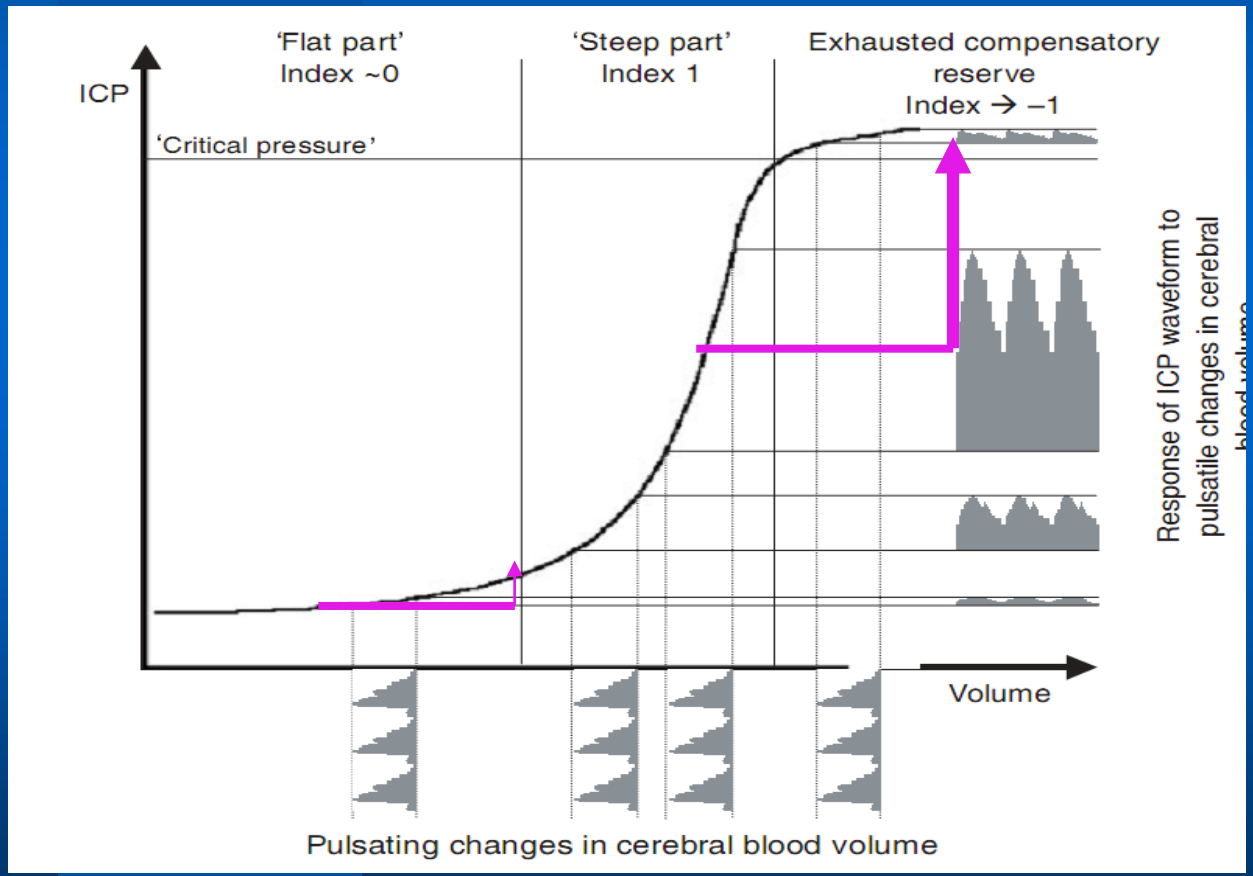
Symptoms and signs of IICP

- Headache/vomiting/papilloedema
- Cushing triad (BP高/HR慢/RR慢)
- VI palsy
- Thumb signs
- Sella erosion
- Sulci effacement



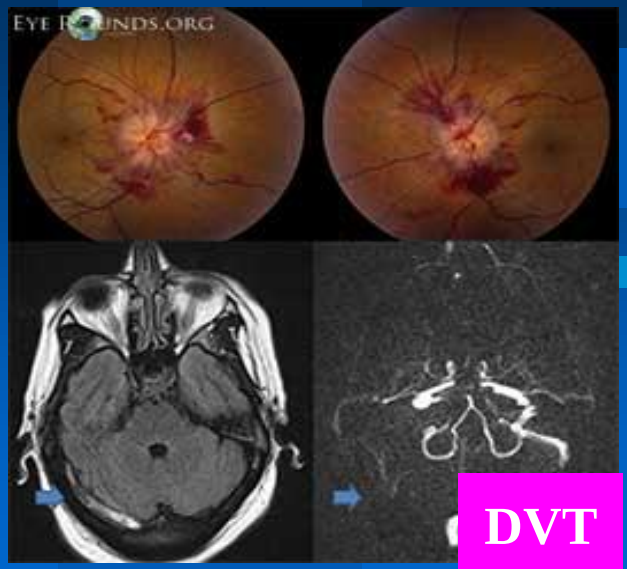
Increased intracranial hypertension

CPP= MAP-ICP = D+1/3(S-D)- ICP

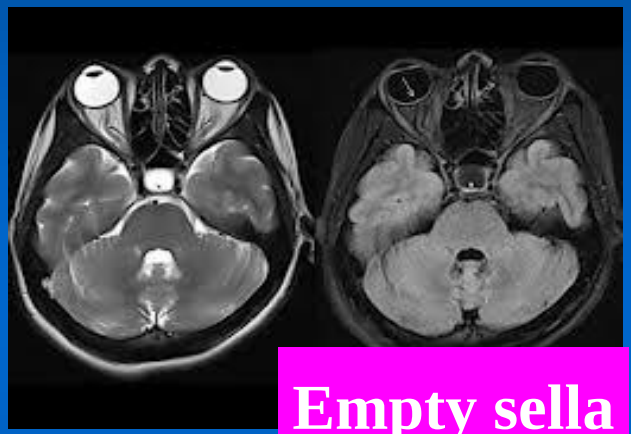


(2006, BJA)

IICP



DVT



Empty sella

Papillo-edema

Midline shift

VI palsy

Thumb sign

Idiopathic IICP(IIH)
(原發性顱內高壓症)

1. Most frequently occurs in **obese women** of childbearing age.
2. F:M=3~8:1
3. May associate with endocrine (adrenal insuff, Cushing synd, hyper-, hypo-thyroidism..), **drugs** (cimetidine, steroids, minocycline, nalidixic acid, tamoxifen..), IDA, CKD, SLE, Lyme disease, **維他命A中毒等(魚油..)**.

4. Rx: medical (prednisolone) and surgery (CSF diversion).
5. Underlying control (weight loss, stop causative meds..).

Red flags in IICP

Table 1. List of red flags and their frequencies

Red flag	Frequency	Percentage
Onset of new or different headache	64	57.7
Nausea or vomiting	33	29.7
Worst headache ever experience	32	28.8
Progressive visual or neurological changes		
Paralysis		
Weakness, ataxia or loss of co-ordination		
Drowsiness, confusion, memory impairment or loss of consciousness		
Onset of headache after age of 50 years		
Papilloedema		
Stiff neck		
Onset of headache with exertion, sexual activity or coughing		
Systemic illness		
Numbness		
Asymmetry of pupillary response	2	1.8
Sensory loss	1	0.9
Signs of meningeal irritation	1	0.9

Table 2. Red flags with *p*-value less than 0.05 on multivariate regression analysis

Variable	*p*-value
Papilloedema	0.0124
Drowsiness, confusion, memory impairment or loss of consciousness	0.0069
Paralysis	0.0190

The British Journal of Radiology, *76* (2003), 532–535
DOI: 10.1259/bjr/89012738

Case 1

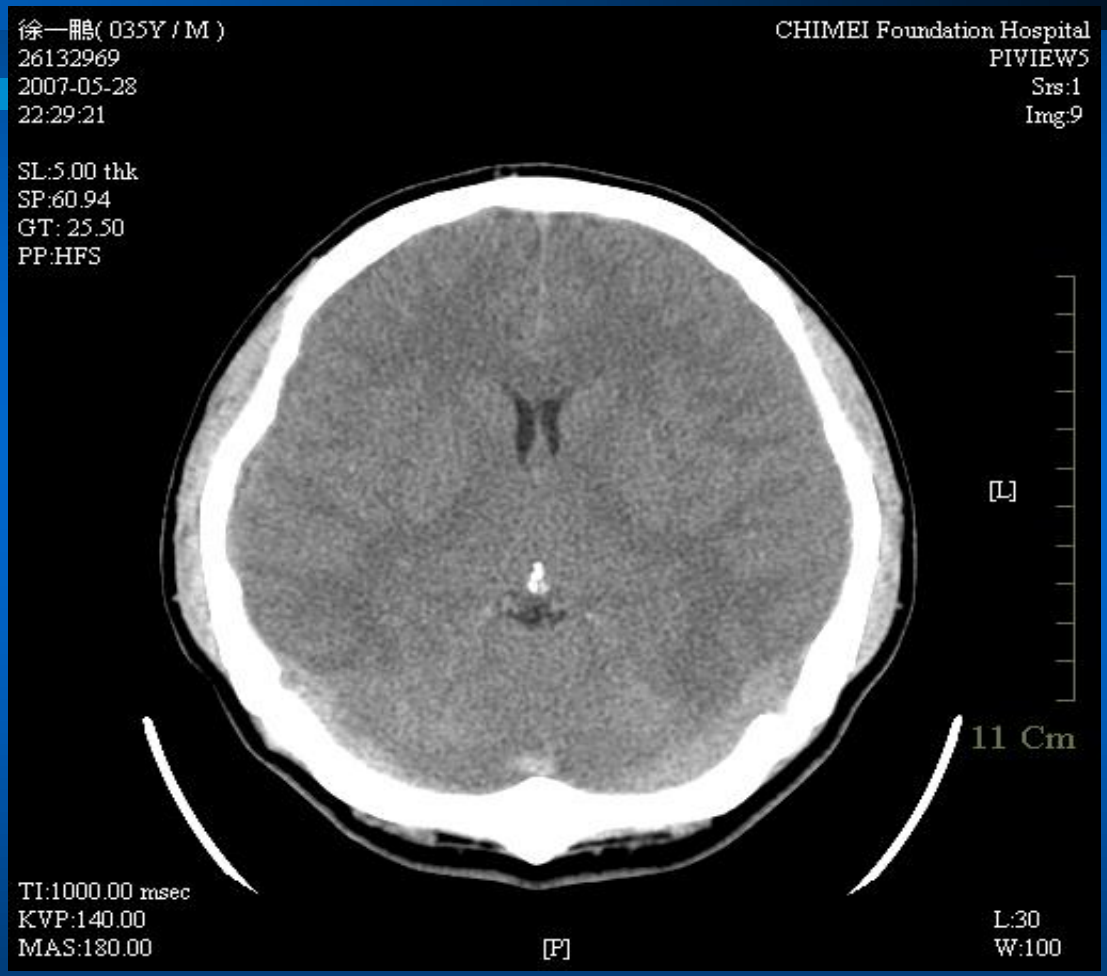
CC:

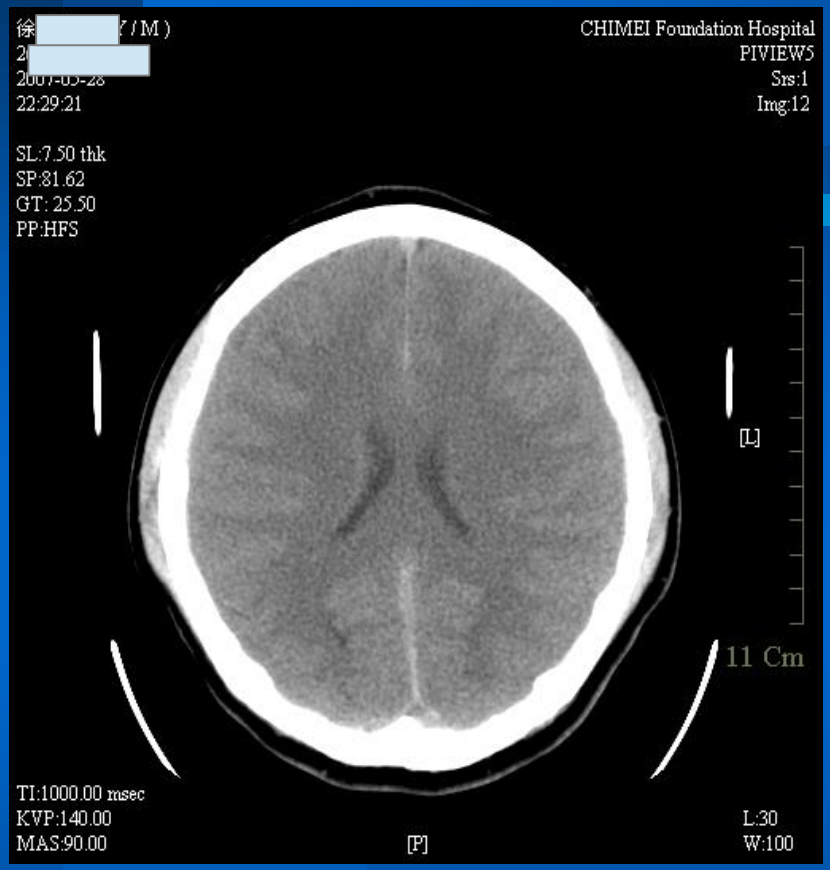
- **35歲,男性, severe headache with vomiting 2天.**

PH:

- Persistent headache for 4 weeks, from occipital extended to frontal area.
- Non-pulsation character, position-related (upright worsen, lying down better), whole days long. Severe pounding pain when head down (VAS=7-8)

Brain CT (without contrast)

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PIVIEW5
Srs:1
Img:12
22:29:21
SL:7.50 thk
SP:81.62
GT: 25.50
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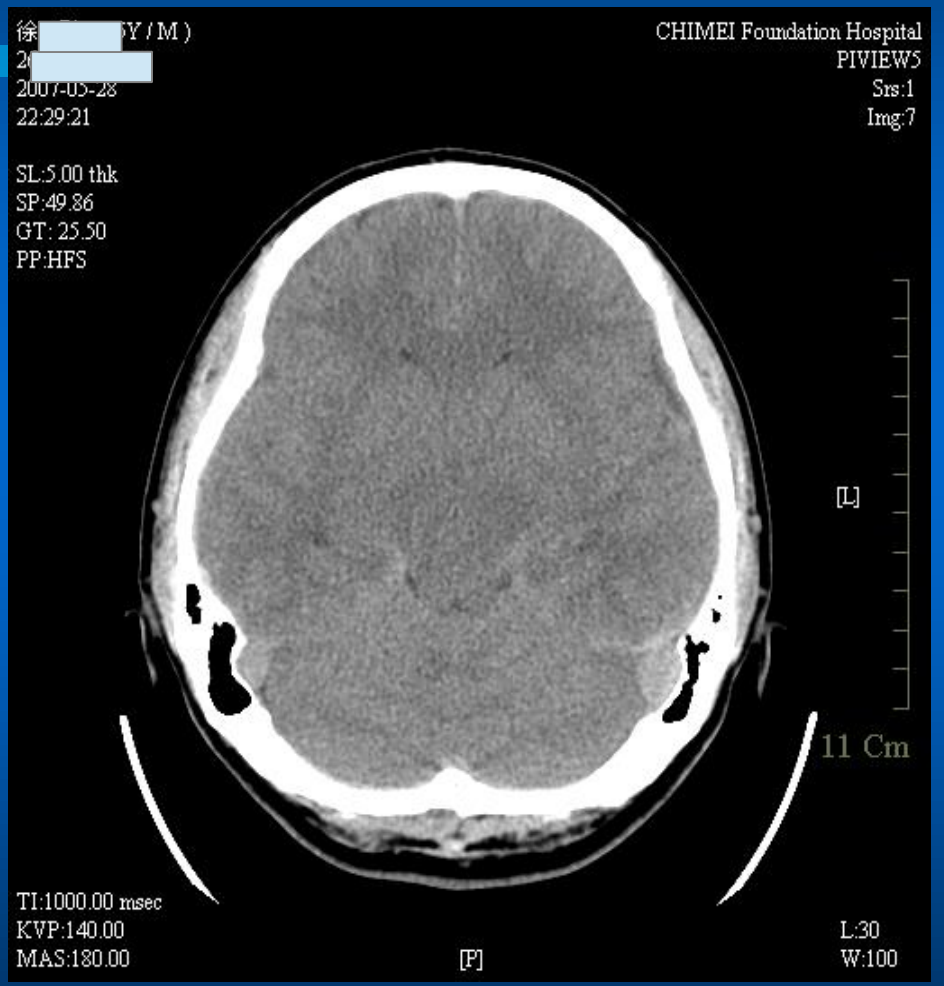
KVP:140.00
MAS:90.00
[P]
L:30
W:100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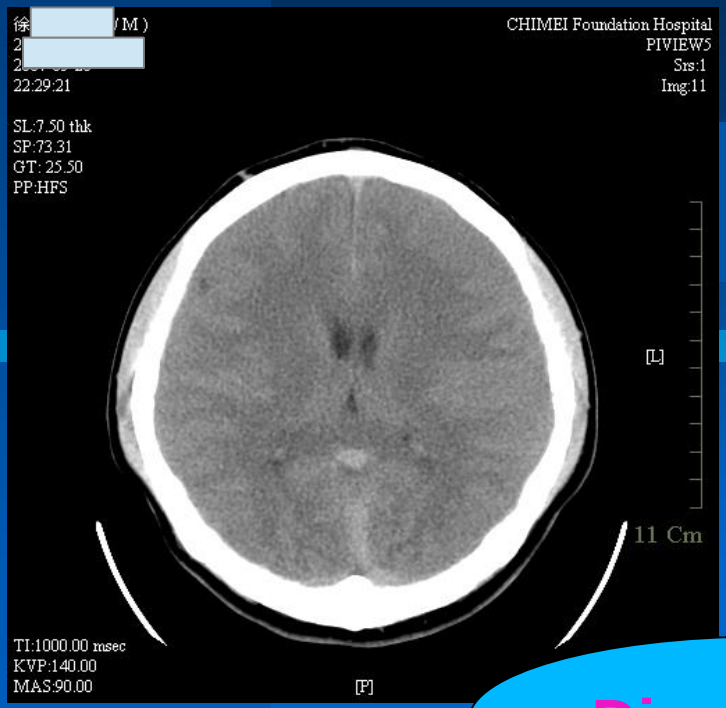
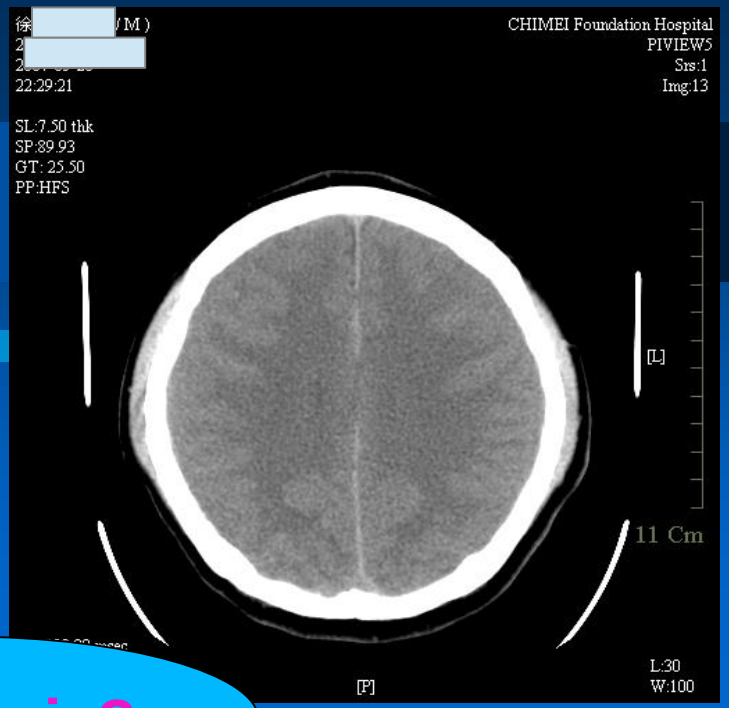
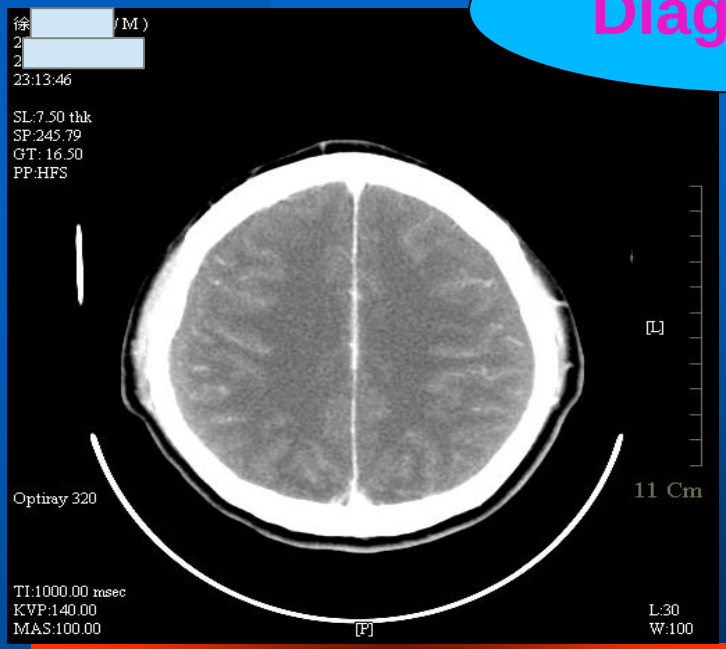
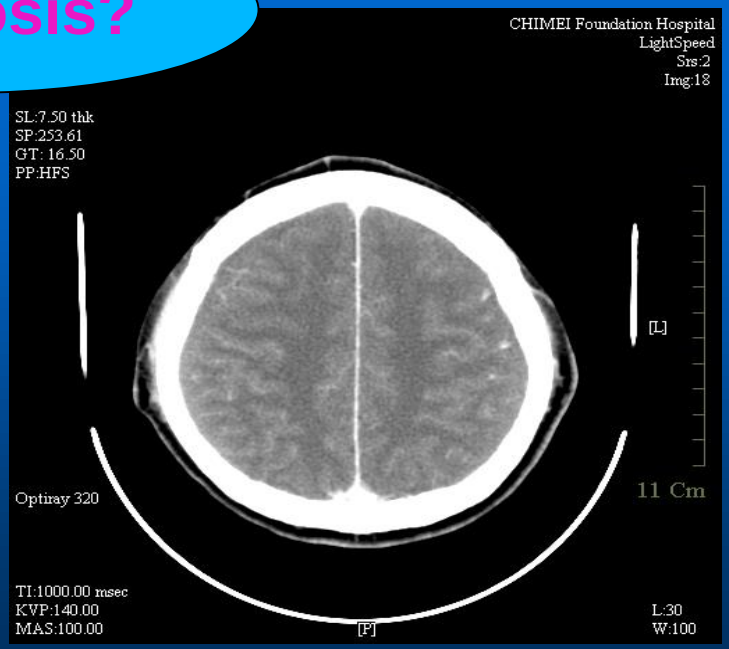




C-

Diagnosis?

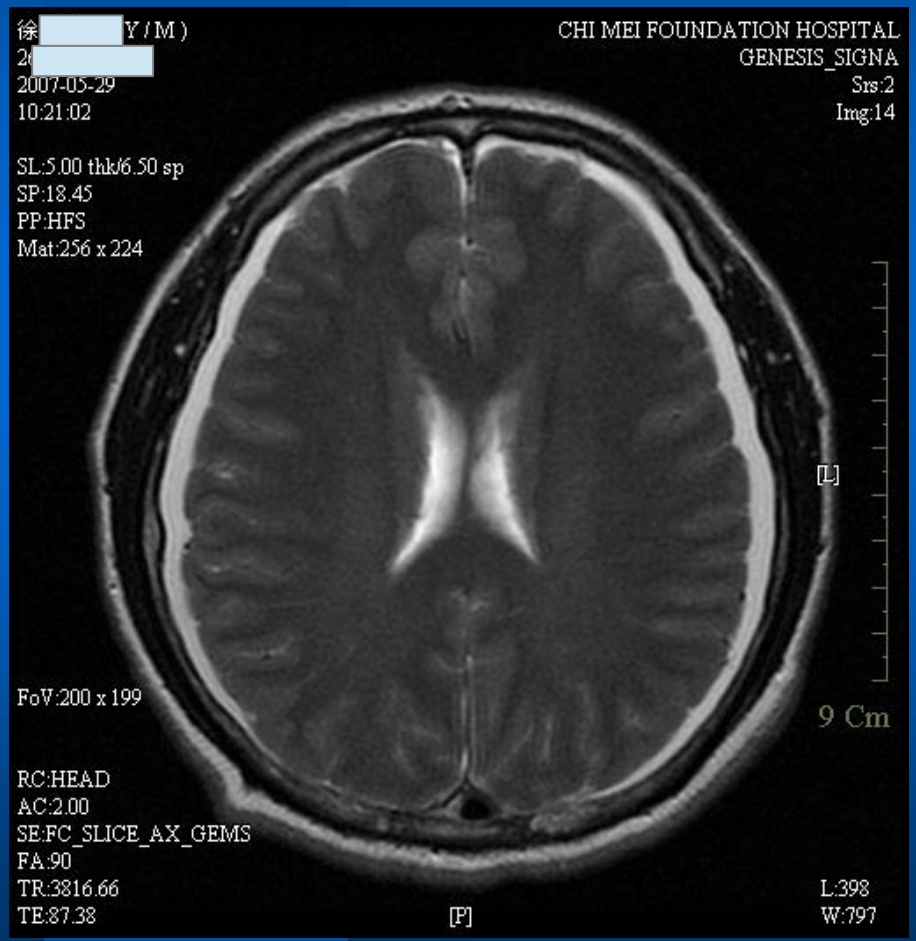


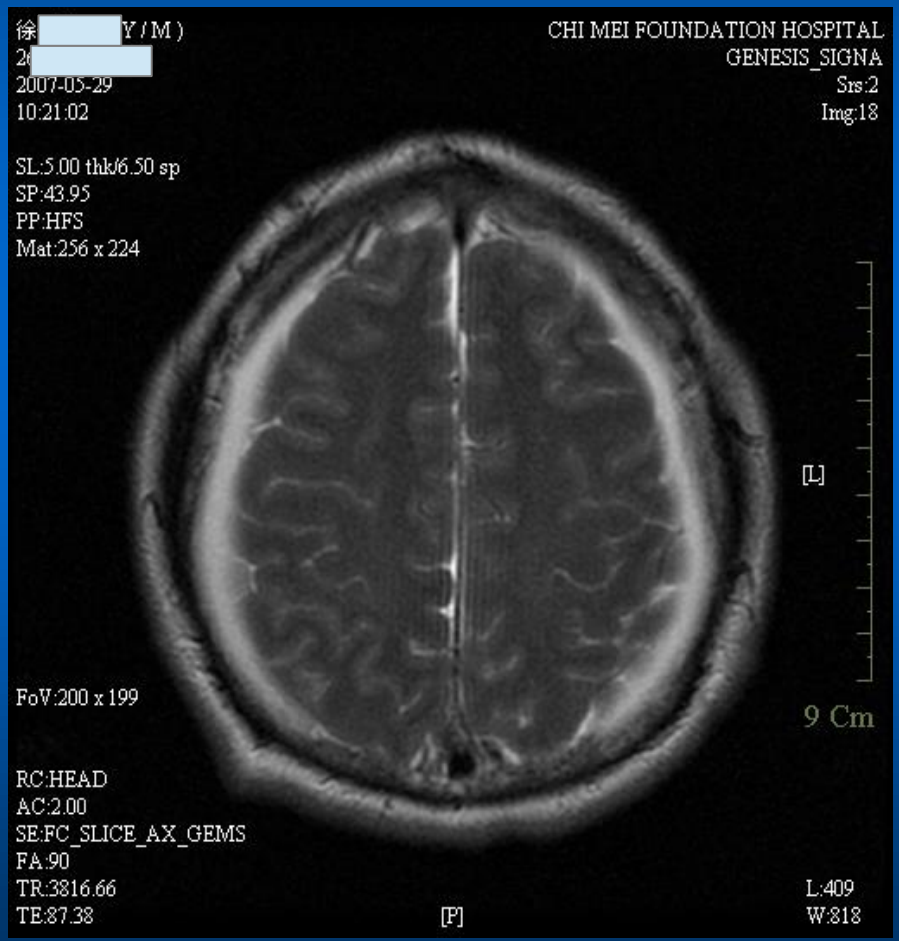


C+

MRI (T2WI)

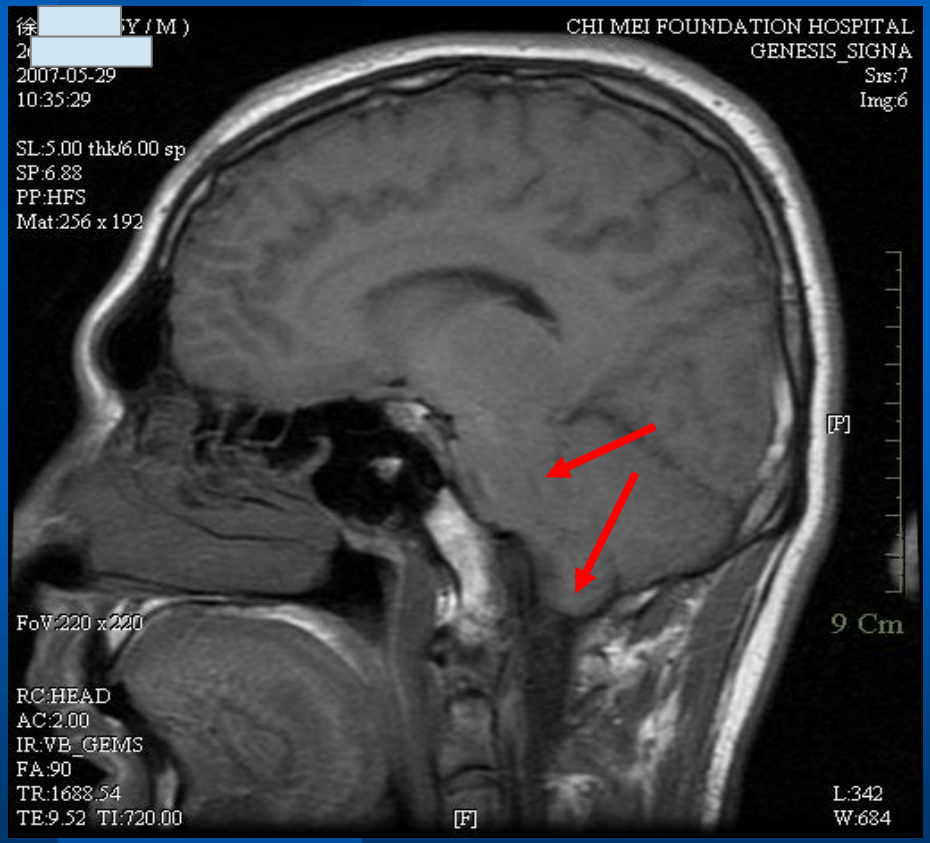
MRI 報告: Subdural effusion

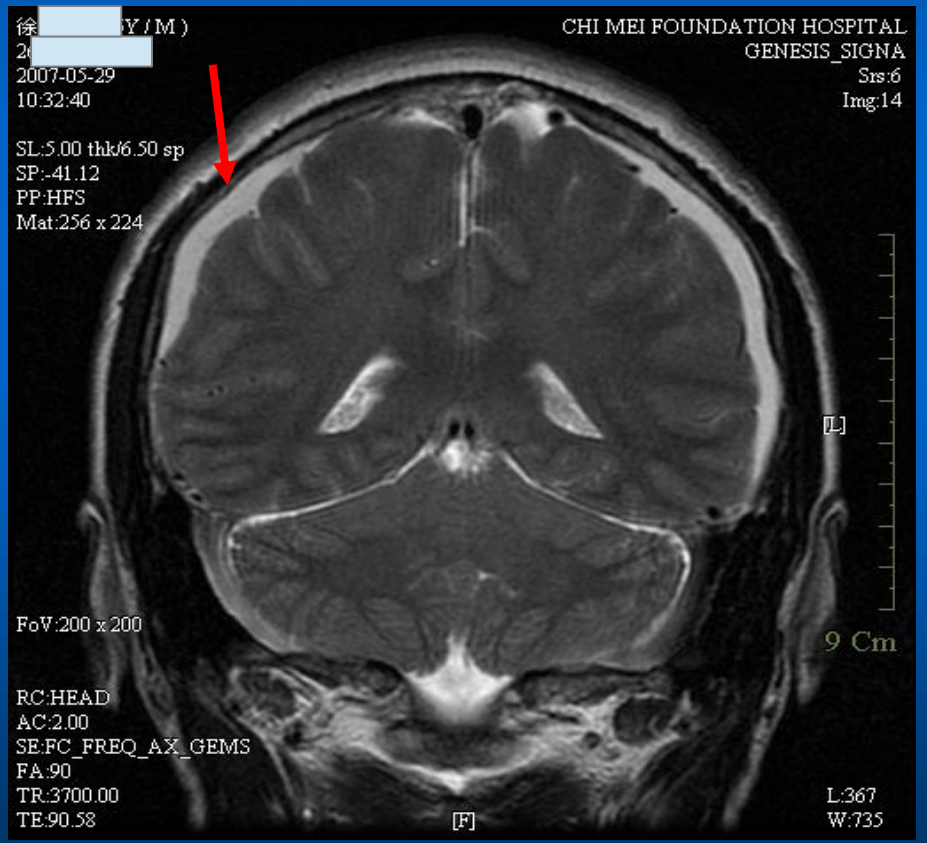




Diagnosis?

Midbrain sagging
Tonsilar hernia
Subdural fluid collection





CSF study

- IP/TP= 60/30 mm H20
- India ink- negative.
- Gram stain- negative
- TB-PCR-negative.
- WBC=1
- RBC=140
- L:N=1:0
- Protein= 54.3 (15-45mg)
- Sugar 77 (40-70)

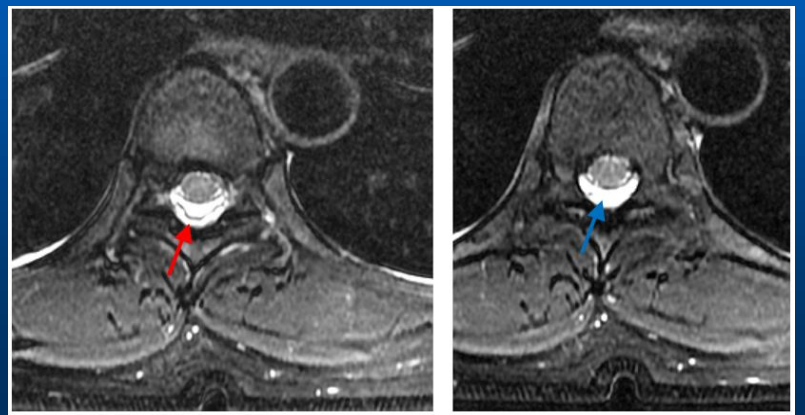
Intracranial hypotension syndrome: (SIH-自發性顱內低壓症) (2014-ICHD-3-beta)

1. It is characterized by orthostatic headache, usually occur or worsen with upright posture.
2. May associate with chronic headache or even no suffers.
3. Pain exacerbated by laughing, coughing, or Valsalva maneuver.
4. Resistant to treatment of analgesic agents.

5. Usually benign course and resolve symptoms with conservative treatment.

6. Dx can be confirmed by CSF opening pressure (<60 mmH20), and MRI (Gd+) to define pachy-meningeal enhancement.

7. Occur from a persistent CSF leakage, dural puncture, myelography or spinal anesthesia; may be violated as craniotomy, spinal surgery, craniospinal trauma, or VP shunting.



Treatment

1. Conservative treatment and prognosis is good usually.
2. Increase fluid restoration, heal CSF leakage.
3. Increase salty intake.
4. Epidural blood patch to be a safe and effective treatment (85~98%).
5. Epidural fibrin glue shows a promising result.
6. Surgical correction when all procedures are failed.

Pearl symptom: Orthostatic headache

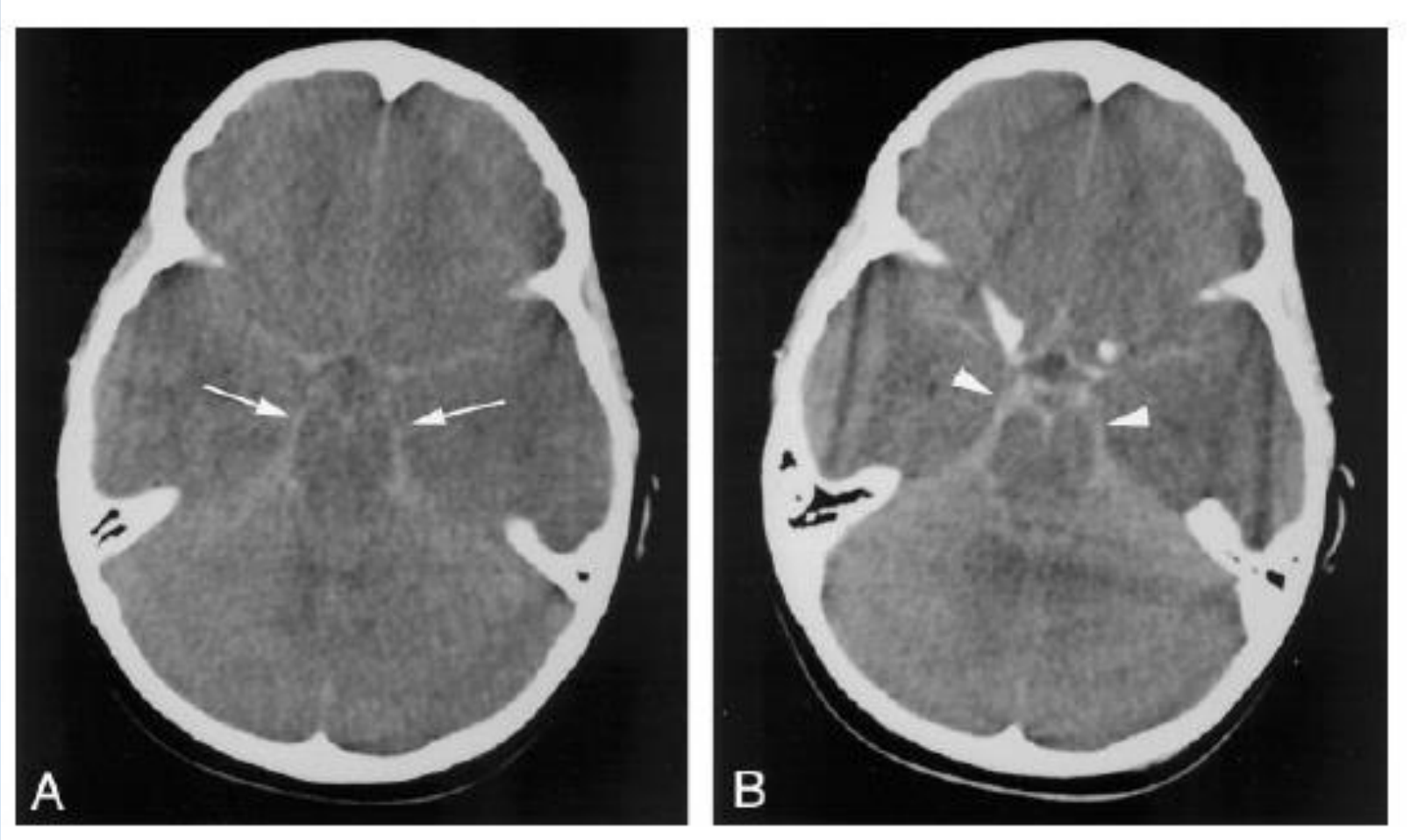
AJNR Am J Neuroradiol 24:254–256, February 2003

Case Report

Pseudo-Subarachnoid Hemorrhage: A Potential Imaging Pitfall Associated with Diffuse Cerebral Edema

Curtis A. Given II, Jonathan H. Burdette, Allen D. Elster, and Daniel W. Williams III

Summary: We report CT findings in seven patients with diffuse cerebral edema and increased attenuation in the basilar cisterns resembling subarachnoid hemorrhage. On the basis of autopsy (three cases) and lumbar puncture (four cases) findings, true subarachnoid hemorrhage was reasonably excluded. Pathophysiologic changes that occur with diffuse cerebral edema are explored, with proposed explanations for the appearance of a pseudo-subarachnoid hemorrhage.

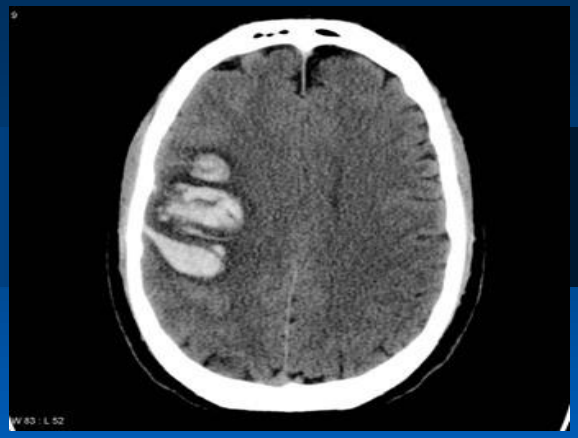


A= non-contrast CT

B=contrast CT

Pseudo-SAH
(CSF=no blood)

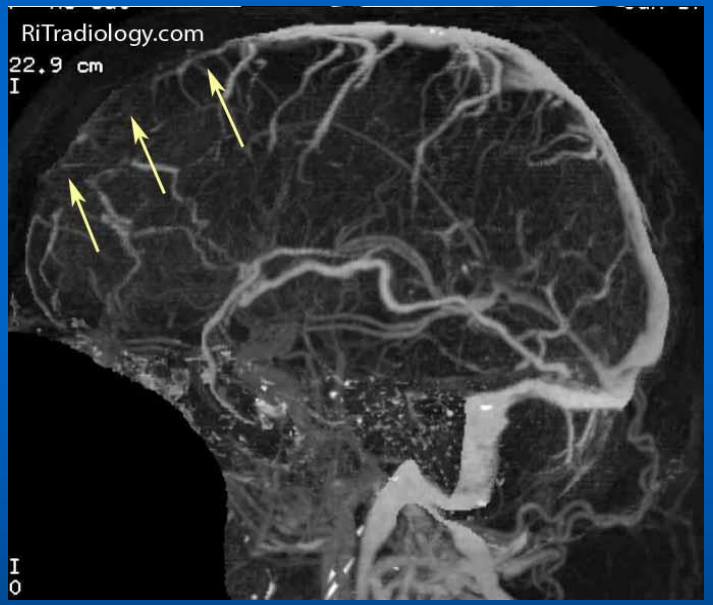
Case 2



1. 37歲, F, pulsatile tinnitus and bilateral throbbing headache for 1 month.
2. No HTN or trauma Hx, migraine was told previously.
3. 過去一個月來頭痛時好時壞，服藥會稍緩解。
4. At OPD, Neck tight, persistent headache over cranium and dullness, 說不上來的不舒服。FB=1fb
5. Someday at home was found lapse with seizure once, but no fever. She was sent to our ER.
6. NE: Lt side mild weakness, 180/80 at ER

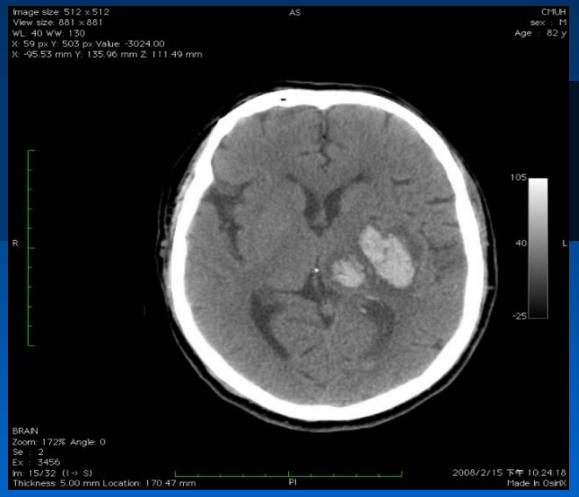
Sinus thrombosis with ICH
靜脈竇栓塞合併腦出血

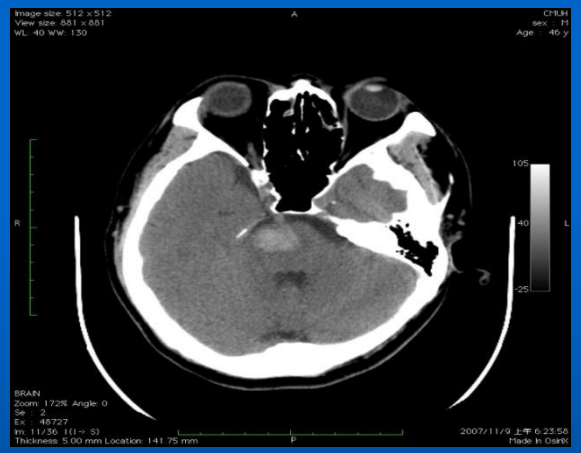
1. Amyloid angiopathy
2. HTN related ICH
3. AVM rupture
4. Aneurysm rupture
5. Non of the above

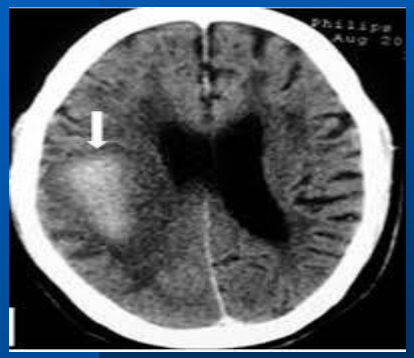


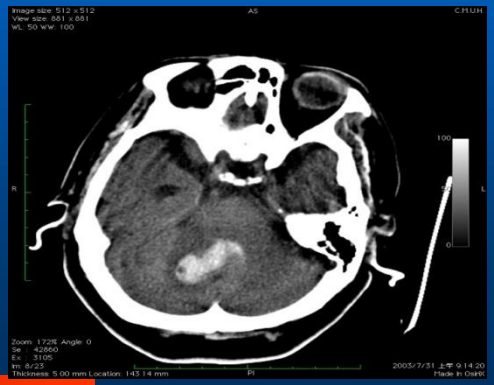
高血壓常見出血位置

- Putamen (40%)
- Thalamus (30%)
- Brain stem-Pons(10%)
- Cerebellum (10%)
- Sub-cortical area (10%)







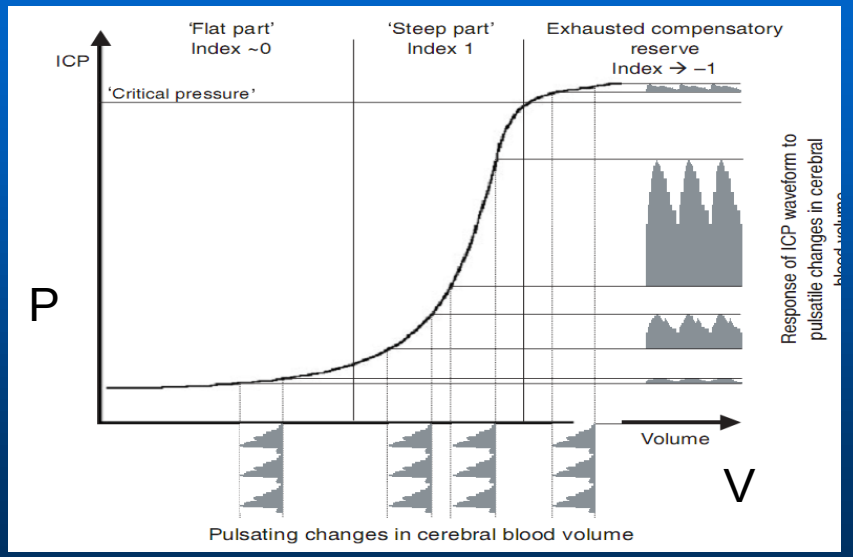


Management of sinus thrombosis

1. ICU care with IICP control
2. Heparinization

CPP= MAP- ICP

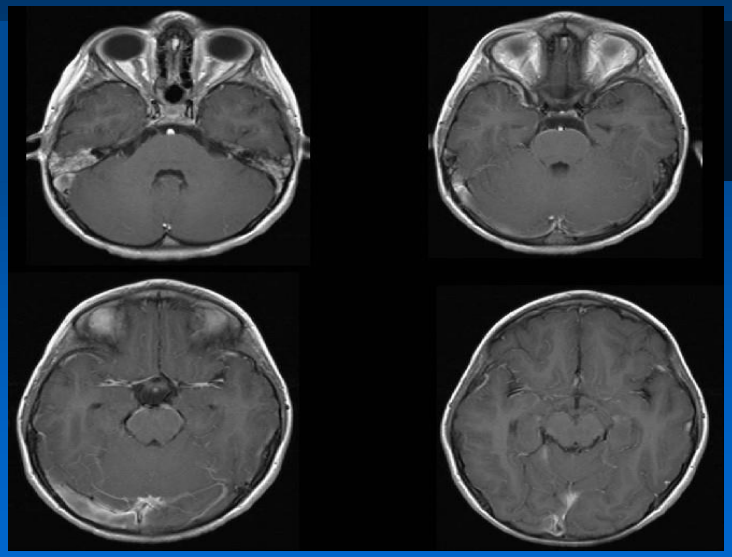
Pearl symptom:
Headache with lapse, neck rigid or focal NE signs

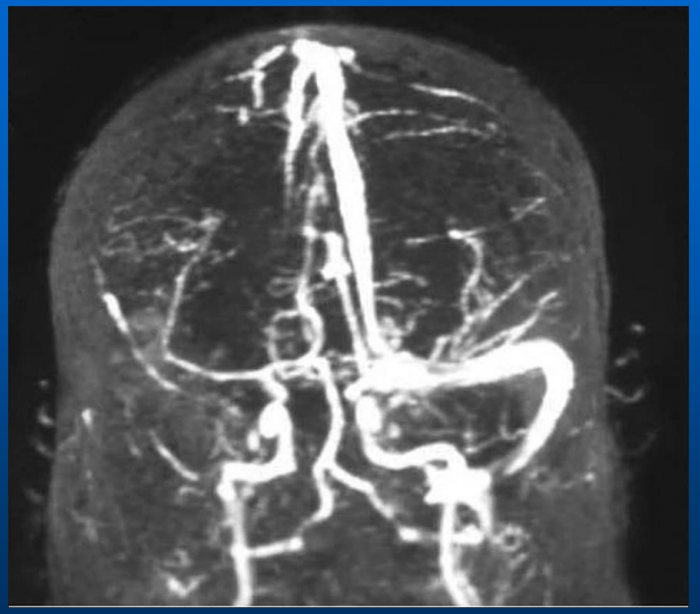


對於奇怪的頭痛,不論有否合併神經學異常,sinus thrombosis 一定要考慮!

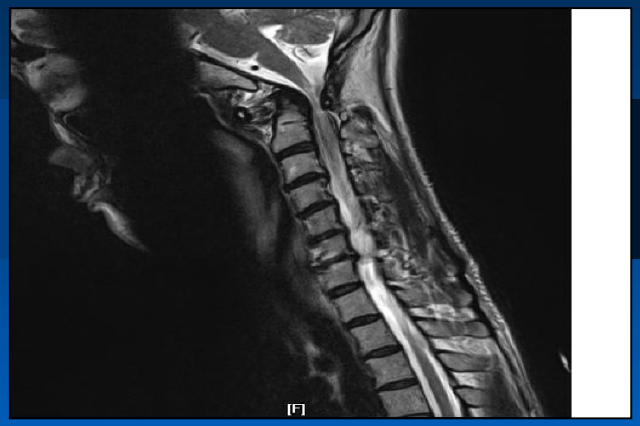
1. 18 yrs teenager had fever and headache for 2 wks, pounding pain over occipital area.

2. 45 yrs F had poorly-controlled partial Sz and severe headache of whole cranial area. Co-morbid with HTN and sicca syndrome.



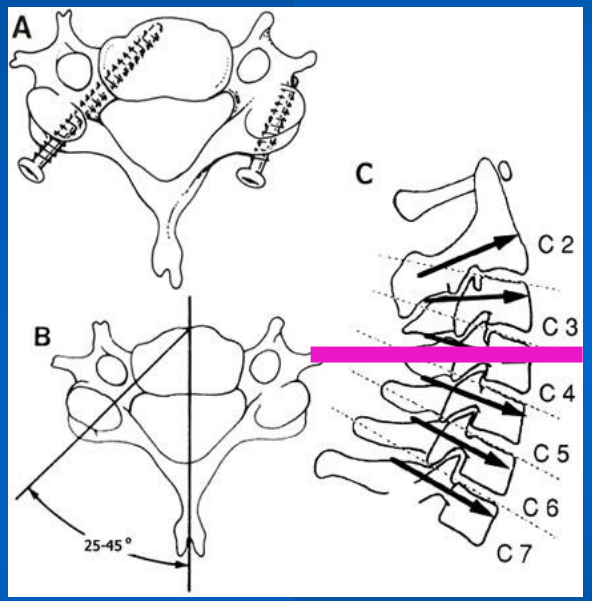


Tentative diagnosis? What the next step?



1. 45y, M, occipital headache with throbbing but no N/V.
2. Nuchal numb and pain on neck motion.
3. Left limbs weakness and upper dystonia happened before visited ER.
4. Brain CT: Negative

頸因性頭痛 (ICHD-II, 2004)



A. 源自頸而表現在頭及/或臉一處或多處的疼痛，符合基準C及D

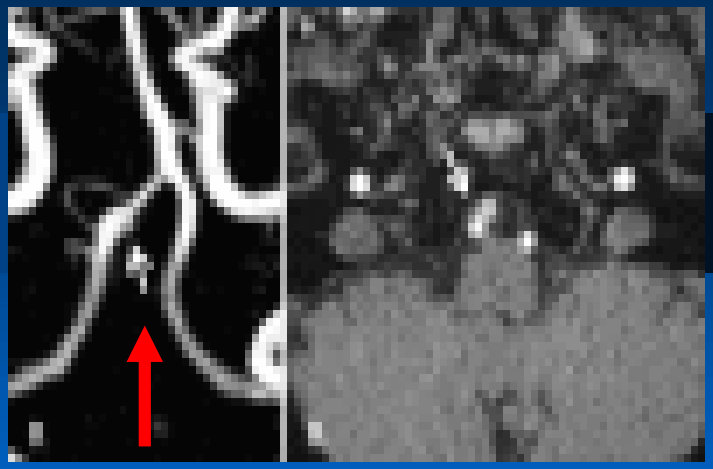
B. B. 經臨床、實驗室及/或影像證明，有一已知是或普遍認定為頭痛確切致因的頸椎或頸部軟組織疾患或病變

C. C. 依據至少下列一項，證實該疼痛可歸因於頸疾患或病變：

1. 臨床徵候顯示，疼痛來自頸部
2. 在安慰劑或其他合適的控制型試驗下，對頸部結構或其支配神經施行診斷性神經阻斷後，可解除頭痛

D. D. 疼痛在致病疾患或病變有效治療後三個月內緩解

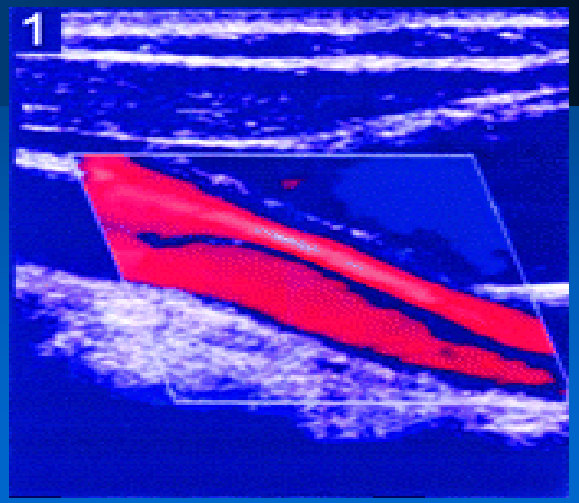
Diagnosis?

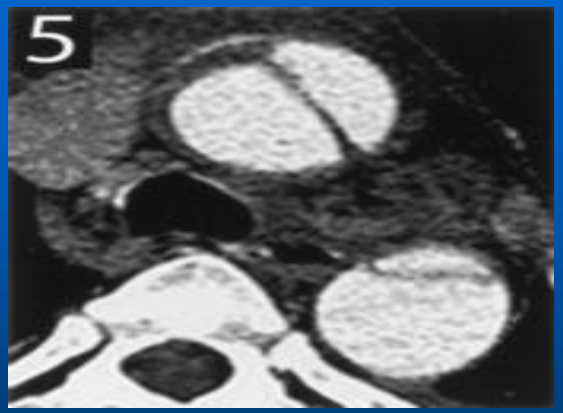


1. 29 yrs male patient suffered from headache and right neck pain after massage.
2. He happened throbbing HA without N/V, on the Rt side, and little effect to NSAID.
3. Transient fall and dizzy after morning awakened on the next day.
4. Visit ER, PE and NE showed neck bruits obviously, but without central BS or cerebellum signs.

Pearl symptom:
Headache and neck bruit
(post-massage)

1. 頭痛及頸部疼痛為主要主訴
2. 神經學檢查(必須聽一聽頸部有否雜音)
3. CT/MRI不一定會有發現,必須靠血管檢查(CTA,MRA)
4. 頸動脈超音波可以協助了解是否狹窄或撕裂
5. 治療可以置放頸部支架或血管修補術
6. **Spontaneous or trauma-related**





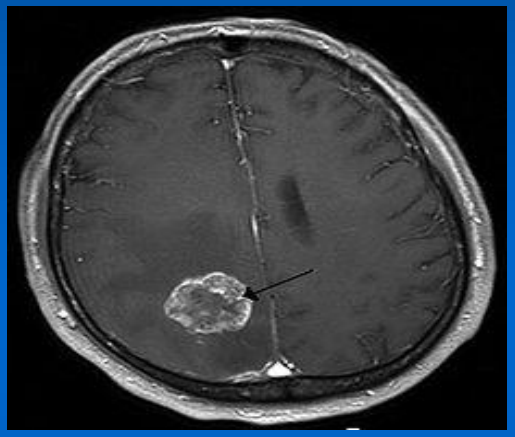
ER case-Dr翁 at CMMC

Pearl symptom:
Headache and VF defect

1. 56 yrs old, F, had sudden headache with pounding character over vertex (VAS-10).

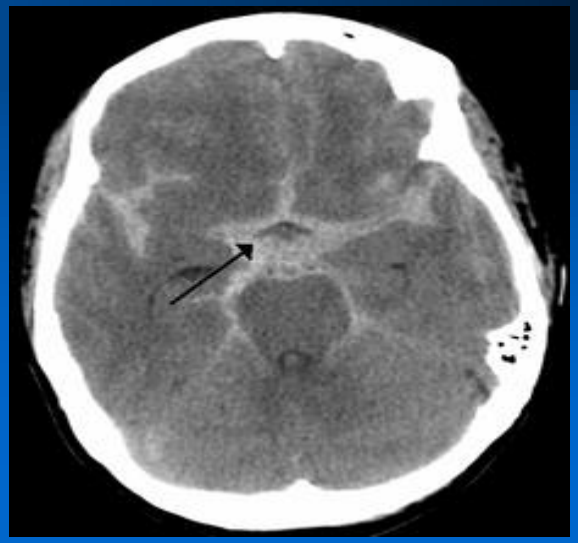
2. Previous migraine Hx(+), and breast ca 5 yrs ago, with CT/RT therapy.

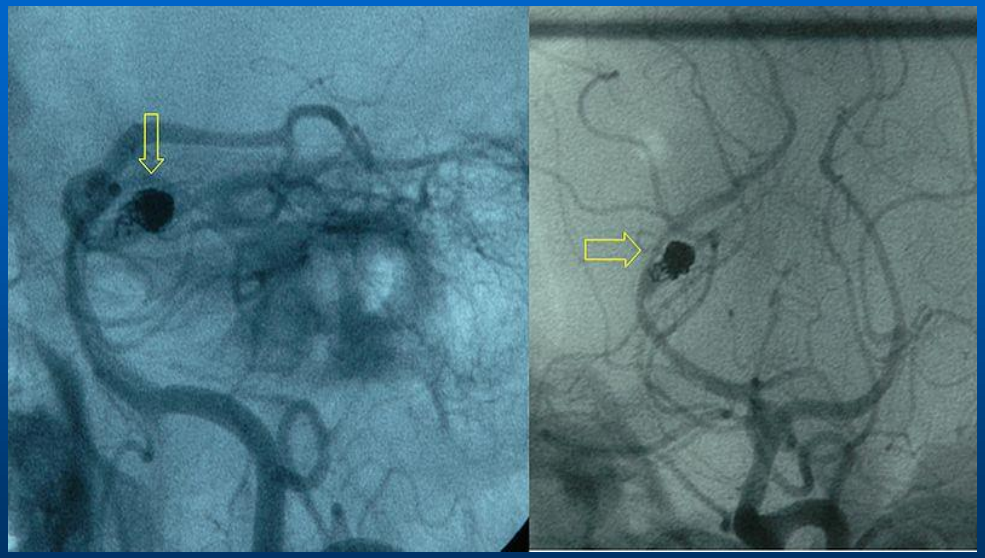
3. NE no limbs weakness, but visual filed (VF) defect by confrontation test.



SAH, aneurysm rupture

1. 68 yrs old male pt, HTN+, DM+, Sudden severe headache and LOC.
2. Profound vomiting during HA, and lapse soon.
3. Neck stiffness was noted (4fb band width) and OCHA on arriving at ER.
4. pupil dilated on both eyes



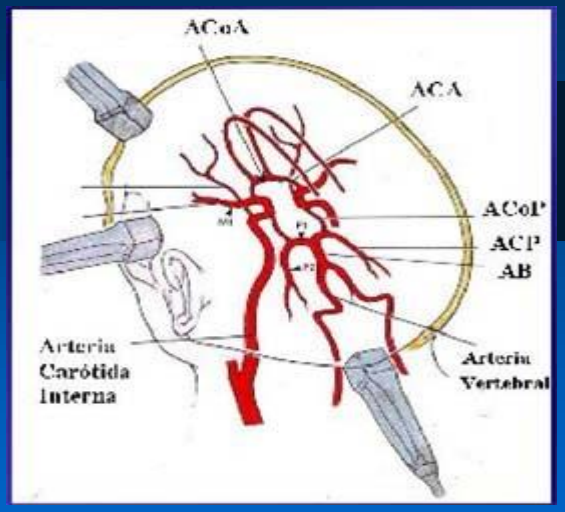


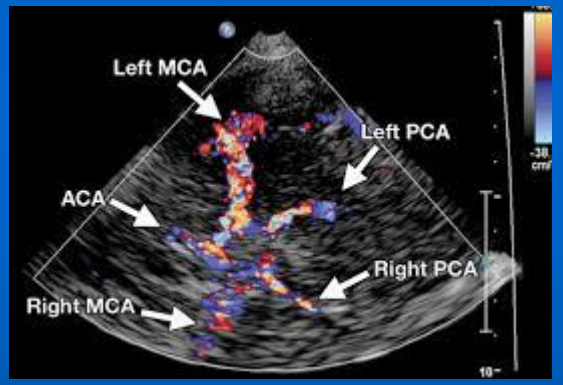
Pearl symptom:
Unusual headache and neck stiffness

1. 自發性必需深究原因
   (年輕人-AVM; 中老年-Aneurysm)
2. 外傷性可以症狀治療處理
3. 血壓高必須區別是否腦壓升高.
4. 注意有否IICP(如前-Cushing, severe vomiting, VI palsy..)
5. 使用Nimotop injection 避免血管收縮造成腦缺血
6. TCD可以了解腦血流狀況(流量高低,阻力高低…)

Thunderclap headache
(10-25%會以雷擊性頭痛表現)

TCD for IICP





無腦血流

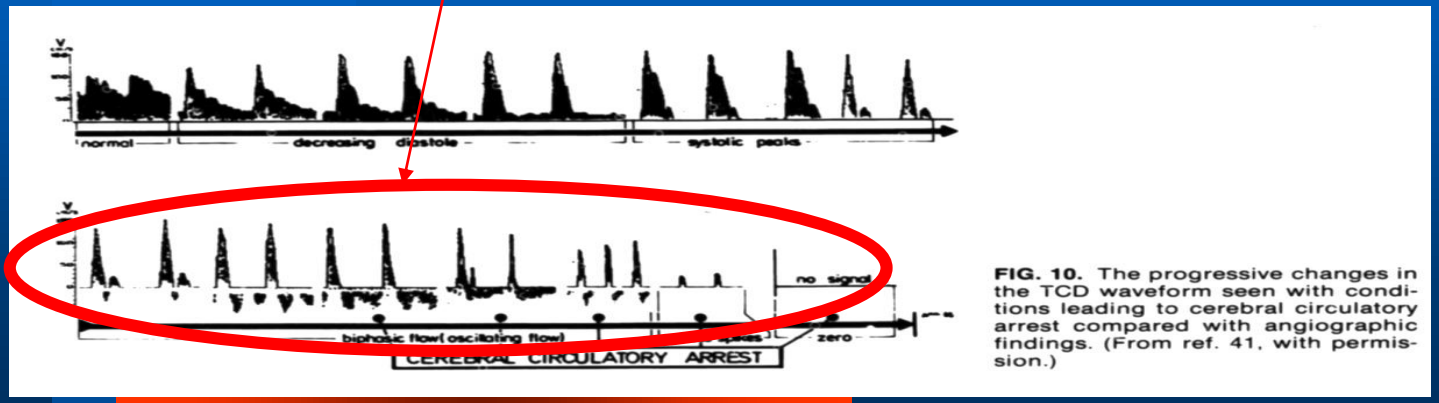


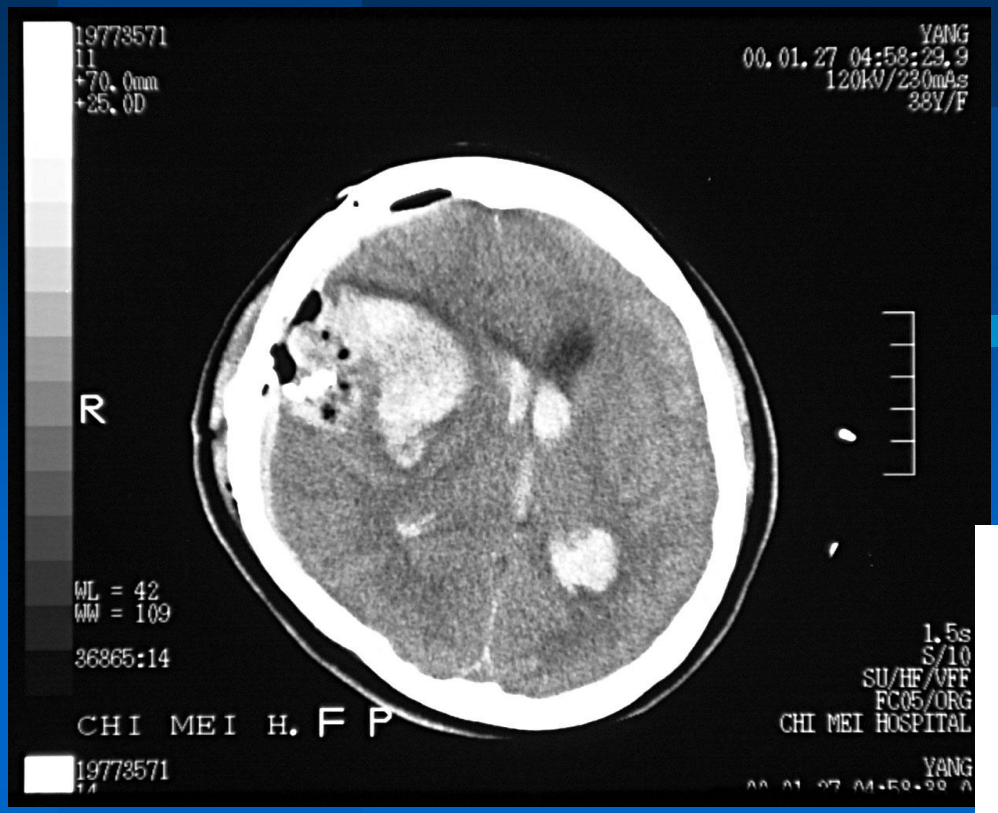
FIG. 10. The progressive changes in the TCD waveform seen with conditions leading to cerebral circulatory arrest compared with angiographic findings. (From ref. 41, with permission.)

Summary of findings Increased Intracranial Pressure (ICP) and Cerebral Circulatory Arrest

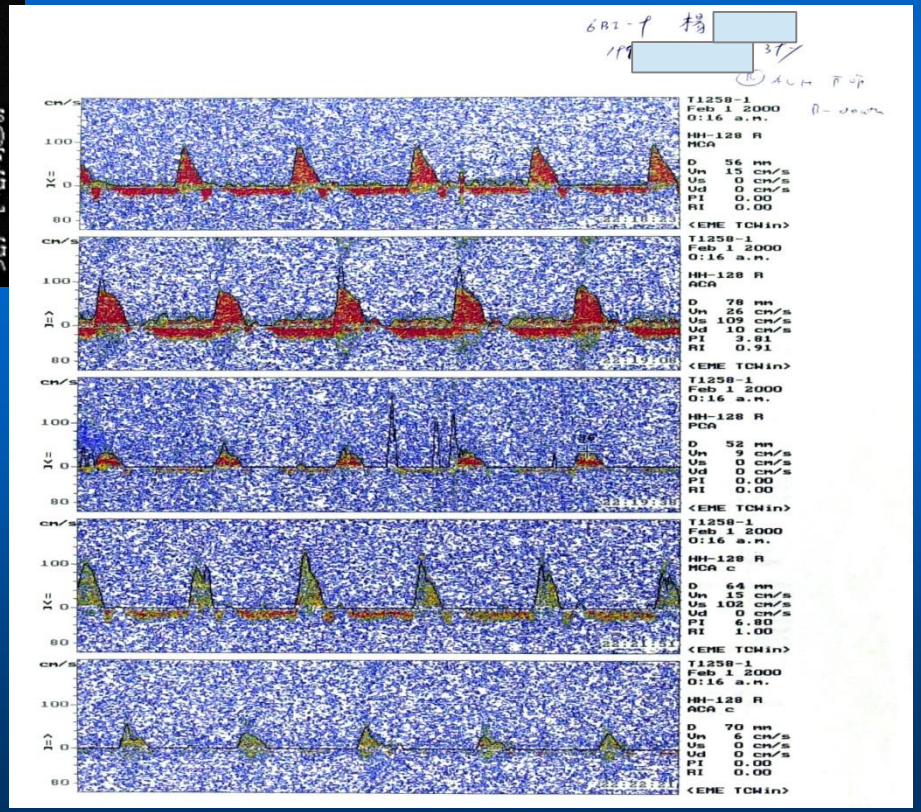
INDICATION	SENSITIVITY (%)	SPECIFICITY (%)	REFERENCE STANDARD
Cerebral Circulatory Arrest and Brain Death	91-100	97-100	Conventional angiography, EEG, clinical outcome

Recommendation: TCD is a useful adjunct test for the evaluation of cerebral circulatory arrest associated with brain death **(Type A, Class II evidence).**

TCD for brain death confirmation- CUBA LAW



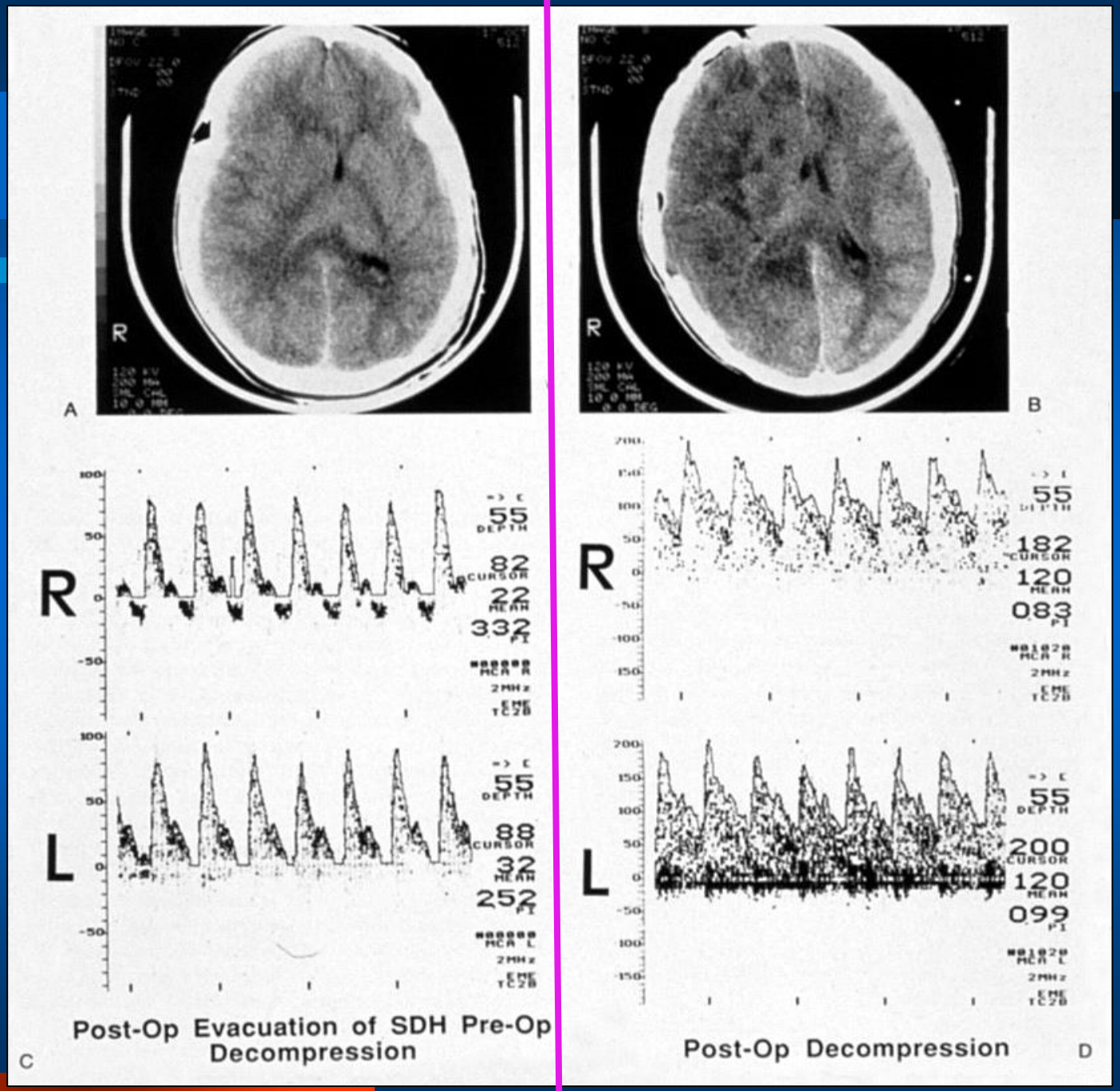
Small systole, zero diastole



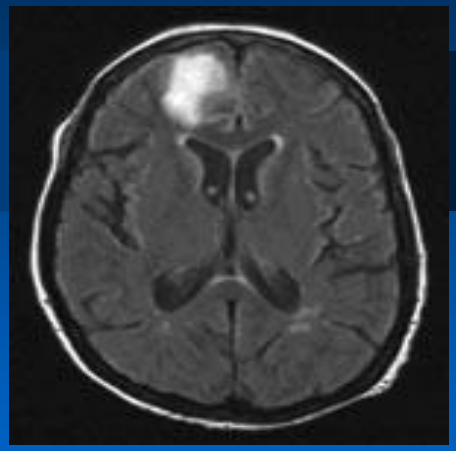
E1VEM1
FLACCID RESPONSE
ALL REFLEX(-)

SDH with IICP

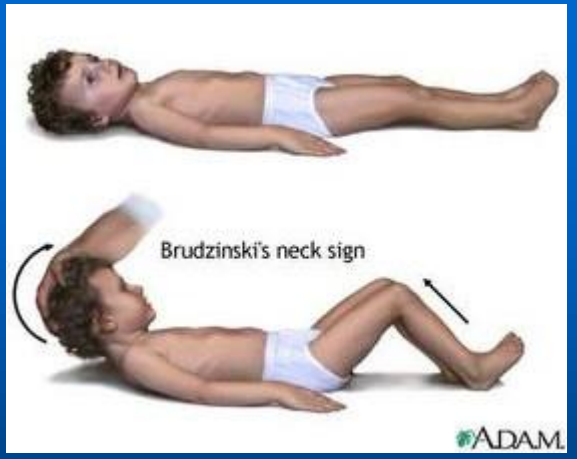
High Peak, Low diastolic



Meningo-encephalitis



1. 28 yrs, F, URI for 1 wk.
2. Fever and headache off and on.
3. Seizure once and was sent to ER.
4. NE: neck stiff and post-ictal confusion.



Pearl symptom:
Headache, fever and conscious change

1. 可以單獨影響腦膜或腦炎(意識受影響)
2. 區別病因(病毒,細菌,其他)
3. CSF+MRI檢查
4. 確定病毒性,使用acyclovir愈早愈好 (Herpes simplex encephalitis)
5. 預後依其影響範圍而定
6. 抽搐必須藥物控制避免缺氧或重積癲癇
7. EEG評估腦部功能(不必一直MRI追蹤)

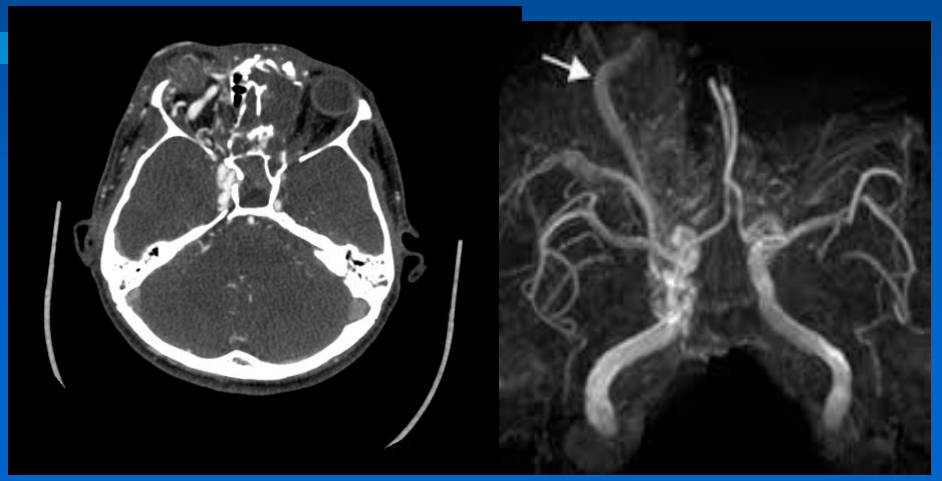
Pearl symptom: Headache, IIOP

- 46 yrs, F, Rt frontal headache for 5 days, with visual acuity decline.
- PE: right reddish eye and eyeball pain, with epiphoresis sometimes.
- Photophobia and anisocoric pupil.

1. SUNCT.
2. SUNA.
3. SYMPATHETIC OPH-ITIS.
4. MUCOMYCOSIS
5. Non of the above

Pearl symptom:
Headache, exo-OPH, eye bruits

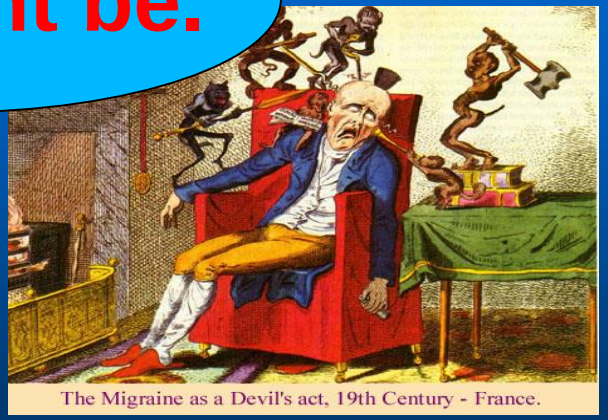
- 70 yrs, M, MCA, right frontal head injury.
- Right eye chemosis, conjunctiva hyperemia, and throbbing headache.



1. CCF
2. SNUCT
3. GLUCOMA
4. TELANGIECTASIA
5. NON OF THE ABOVE

What kind of headache appearance is pathogenic?

All might be.



The Migraine as a Devil's act, 19th Century - France.

Simple review

1. 30歲男性, 端坐起頭痛，躺著也頭痛=?
2. 35歲女性, 頭痛時合併雙眼流淚, 顴骨壓痛, 鼻漏=?
3. 75歲老嫗, 頭痛合併嘔心/嘔吐/怕光, 停經已25年=?
4. 18歲男性打球時突然意識不清倒地不起, 抽搐及眼球往下看(sun-set eyes)

1. IICP. 2. sinusitis+dural leakage. 3. brain lesion (tumor) 4. SAH

Take home message

1. Organic HA 必須影像區別(SAH, SIH, dissection, meningitis, CCF, glaucoma, sinus thrombosis..)

2. CCB *(flunarizine) for migraine, Na-channel blocker for TN.

3. CCB *(pregabalin) for Sz, PHN, DPNP, FM, SCI, and ON.


謝謝聆聽
敬請指教
感謝 Pfizer 提供場地/聚餐/講義