

頭痛病人的腦部影像檢查： 角色與適應症

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門診場景

42歲女性, 過去20多年來經常發生單側或雙側太陽穴的血管搏動性痛. 有時一週有5-6天在頭痛. 頭痛時會伴隨噁心或嘔吐. 陸續看過許多醫生, 但是”不會斷根”. 最近一週又痛得厲害, 吃了許多藥也無效……

“醫生, 幫我照個腦, 我咁乜生腦瘤?”

.....

考量要不要做頭部斷層掃描？

要做的理由：

1. 怕病人腦部長東西,萬一沒有診斷出而出了嚴重後遺症會挨告.
2. 病人很煩,跟她(他)解釋了很多次仍然擔心長東西,乾脆做了安他的心.
3. 自己的親朋好友,院內好友拜託, **VIP**
4. 其他??

考量要不要做頭部斷層掃描？

不做的理由：

1. 替健保省荷包.
2. 違背我的行醫原則.我不是醫匠,一定要從病史和神經學檢查中有懷疑異常才會安排影像檢查.
3. 其他?? 醫院給我的“扣答”要爆掉了?

原發性頭痛 (primary headache)

- ❖ 偏頭痛 (migraine)
- ❖ 緊縮型頭痛 (tension type headache)
- ❖ 叢發性頭痛及其他三叉自律神經頭痛 (cluster headache and other trigeminal autonomic cephalalgias)
- ❖ 其他 (other primary headache)

The ICHD 2nd edition

1.1 無預兆偏頭痛 Migraine without aura

- A. 至少有5次能符合基準B-D的發作
- B. 頭痛發作持續4-72小時 (未經治療或治療無效)
- C. 頭痛至少具下列二項特徵：
 - 1. 單側
 - 2. 搏動性
 - 3. 疼痛程度中或重度
 - 4. 日常活動會使頭痛加劇或避免此類活動（如走路或爬樓梯）
- D. 當頭痛發作時至少有下列一項：
 - 1. 噁心及/或嘔吐
 - 2. 畏光及怕吵
- E. 非歸因於其他疾患

1.2.1 典型預兆偏頭痛性頭痛

Typical aura with migraine headache

- A. 至少有2次符合基準B-D的發作
- B. 預兆至少包括下列一項，但無肢體無力：
 - 1. 完全可逆視覺症狀，包括正向特徵 (如：閃爍的光、點或線) 及/或負向特徵 (即視力喪失)
 - 2. 完全可逆感覺症狀，包括正向特徵 (即針刺感)及/或負向特徵 (即麻木感)
 - 3. 完全可逆失語性語言障礙
- C. 至少具下列2項：
 - 1. 同名側的視覺症狀及/或單側感覺症狀
 - 2. 至少一種預兆症狀在 ≥ 5 分鐘逐漸產生，及/或不同預兆症狀，在 ≥ 5 分鐘相繼發生
 - 3. 每一種症狀持續 ≥ 5 及 ≤ 60 分鐘
- D. 符合1.1 無預兆偏頭痛 基準B-D的頭痛，在預兆同時或預兆之後的60分鐘內發生
- E. 非歸因於其他疾患

附錄 1.5.1 慢性偏頭痛

Chronic migraine

- A. 頭痛 (緊縮型及/或偏頭痛)每月 ≥ 15 天，至少已三個月
- B. 病人過去至少有五次發作符合1.1無預兆偏頭痛診斷基準
- C. 至少三個月，每個月 ≥ 8 天頭痛符合以下C1及/或C2，也就是符合無預兆偏頭痛的疼痛和關聯症狀的診斷基準
 - 1. 至少有下列(a到d)兩項
 - a) 單側
 - b) 搏動性
 - c) 疼痛程度中或重度
 - d) 日常活動會使頭痛加劇或避免此活動(如走路或爬樓梯)
 - 及至少有下列(a 和b)一項
 - a) 噁心及/或嘔吐
 - b) 畏光及怕吵
 - 2. 使用翠普登或是麥角胺治療並解除預期會發生之上述C1症狀
- D. 無藥物過度使用及非歸因於其他疾患

2.3 慢性緊縮型頭痛

Chronic tension-type headache

A. 頭痛平均發作每月 ≥ 15 日，已 > 3 個月（每年 ≥ 180 日）且符合基準 B-D

B. 頭痛持續數小時或可能持續不斷

C. 頭痛至少合併下列二項特徵：

1. 雙側
2. 壓迫/緊縮性（非搏動性）
3. 程度輕或中度
4. 不因日常活動如走路或爬樓梯而加劇

D. 符合下列兩項：

1. 最多只有畏光、怕吵或輕度噁心其中一項症狀
2. 無中或重度噁心也無嘔吐

E. 非歸因於其他疾患

Table 1. Causes of headache that can be missed on routine CT scan of the head

Vascular disease

- Saccular aneurysms
- Arteriovenous malformations (especially posterior fossa)
- Subarachnoid hemorrhage
- Carotid or vertebral artery dissections
- Infarcts
- Cerebral venous thrombosis
- Vasculitis (white matter abnormalities)
- Subdural and epidural hematomas

Neoplastic disease

- Neoplasms (especially in the posterior fossa)
- Meningeal carcinomatosis
- Pituitary tumor and hemorrhage

Cervicomedullary lesions

- Chiari malformations
- Foramen magnum meningioma

Infections

- Paranasal sinusitis
- Meningoencephalitis
- Cerebritis and brain abscess

Low cerebrospinal fluid pressure syndrome

(Adapted from Evans [42].)

持續三個月以上的新發生頭痛之常見鑑診

❖ 原發頭痛

chronic migraine

chronic tension type headache

❖ 次發頭痛

chronic meningitis

chronic subdural hematoma

medication overuse headache

sinusitis

brain tumor or vascular lesion (eg. Aneurysm)

low CSF pressure syndrome

pseudotumor cerebri (idiopathic intracranial hypertension)

cerebral venous thrombosis

cervical artery dissection

Temporal arteritis

Red flag of headache



- ❖ Sudden, severe explosive headache (thunderclap HA)
- ❖ Worst headache of life
- ❖ New headache in older population
- ❖ New onset of HA with history of cancer, immunodeficiency.
- ❖ HA with mental state changes or new focal neurological sign
- ❖ HA with fever, neck stiffness and meningeal sign
- ❖ Substance abuser (Amphetamine or cocaine) or anticoagulation treatment
- ❖ Pt is pregnant or post-partum
- ❖ HA causing waking from sleep or worsened by Valsalva maneuver
- ❖ Progressively worsening HA
- ❖ Significant head trauma
- ❖ History of seizures without previous neuroimage.

45歲女性，12/7深夜因急性血管搏動性頭痛和嘔吐到急診求診，給予止痛藥後因症狀部分改善而離院回家。隔天頭痛又加重，雖不若那天晚上那麼疼痛，但頸部也痛。因持續了三天，遂於12/10早上到OPD求診。病人說12/7當晚是過去未曾如此痛過的頭痛



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44歲男性,最近半年常會頭痛,多發生於下午到夜間,無噁心和嘔吐的症狀.最近一個月智能和反應力變差,無法教國一兒子的數學功課



可逆性腦內血管收縮症候群(reversible cerebrovasoconstriction syndrome, RCVS)

- ❖ Sudden severe (thunderclap) headache with or without focal neurological deficit
- ❖ Usually affect young persons and sometimes complicated by ischemic or hemorrhagic stroke
- ❖ Reversible multifocal narrowing of cerebral arteries.
- ❖ DDx: SAH, pituitary apoplexy and other thunderclap headache syndrome

Reversible vasoconstriction syndrome (RCVS)

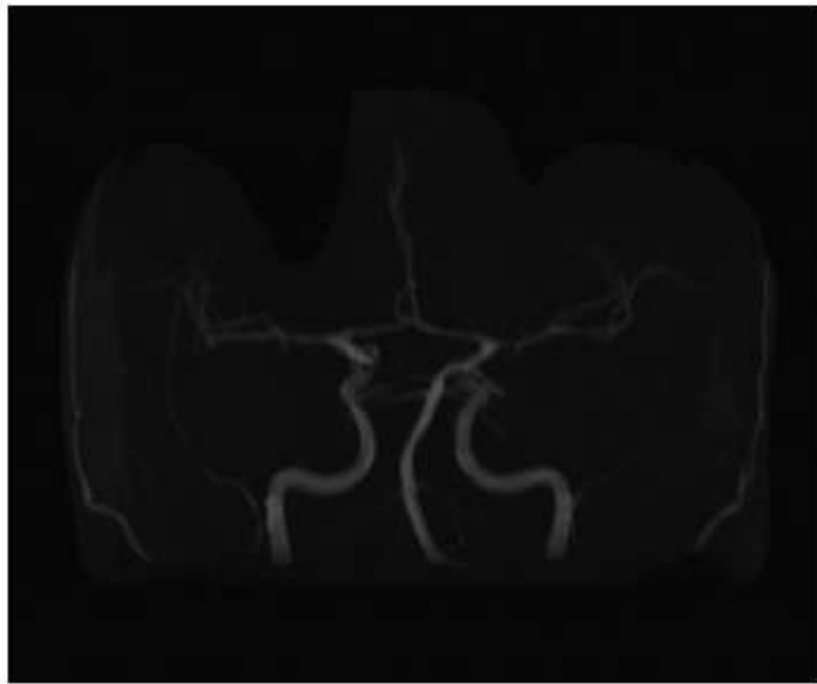


Fig 1.—Magnetic resonance angiogram Circle of Willis at time of presentation demonstrating diffuse narrowing of multiple intracerebral arteries.

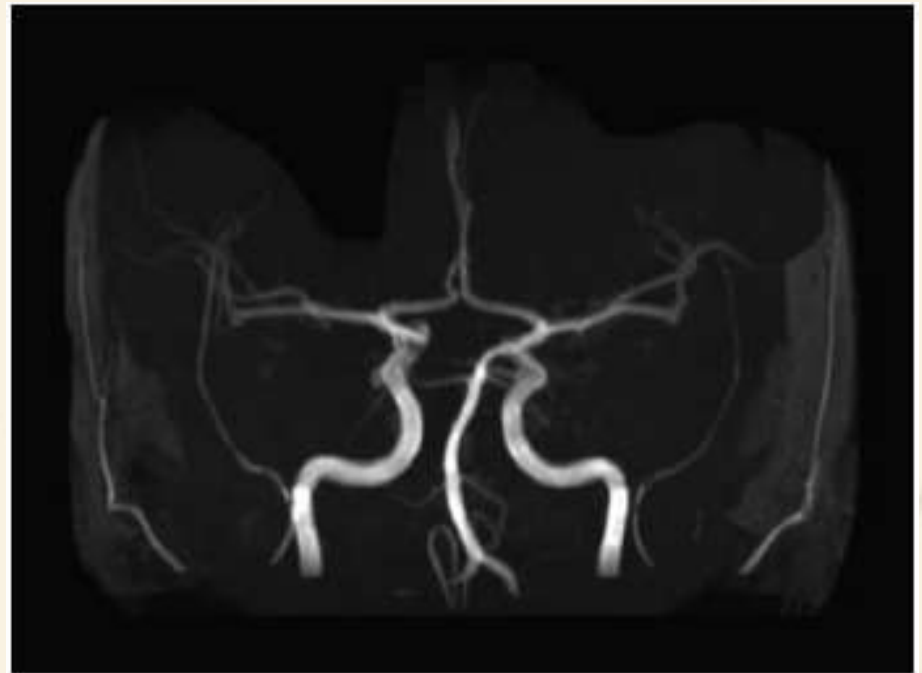


Fig 2.—Magnetic resonance angiogram Circle of Willis at 8 weeks' follow-up showing normal caliber intracerebral arteries.

Table 1. Diagnostic yield of neuroimaging for headache with normal neurological exam*

Abnormality found	Incidence (n = 3027)
Brain tumor	0.8%
Arteriovenous malformation	0.2%
Hydrocephalus	0.2%
Aneurysm	0.3%
Sub-dural hematoma	0.2%
Stroke, including chronic ischemic processes †	1.2%

*From Evans, 1996 †Unlikely to be cause of headache

Table 2. National Society Consensus Guidelines for Headache Symptoms that Warrant Neuroimaging ¹

Emergent neuroimaging recommended	"Thunderclap" headache with abnormal neurological exam
Neuroimaging recommended to determine if it is safe to do lumbar puncture	Headache accompanied by signs of increased intracranial pressure Headache accompanied by fever and nuchal rigidity
Neuroimaging should be considered	Isolated "thunderclap" headache Headache radiating to neck Temporal headache in an older individual New onset headache in patient who is <ul style="list-style-type: none">- HIV positive- has a prior diagnosis of cancer- is in a population at high risk for intracranial disease Headache accompanied by abnormal neurological examination, including papilledema or unilateral loss of sensation, weakness, or hyperflexia
Neuroimaging not usually warranted	Migraine and normal neurological exam
No recommendation (Some evidence for increased risk of intracranial abnormality, not sufficient for recommendation)	Headache worsened by Valsalva maneuver, wakes patient from sleep, or is progressively worsening
No recommendation (insufficient data)	Tension type headache and normal neurological exam

¹ From guidelines developed by US Headache Consortium, the American Academy of Neurology, the American College of Emergency Physicians, and the American College of Radiology.

慢性頭痛，無新症狀

Variant 1:

Chronic headache. No new features.

Radiologic Procedure	Rating	Comments	<u>RRL</u> *
MRI head without and with contrast	4	See statement regarding contrast in text under "Anticipated Exceptions."	O
MRI head without contrast	4		O
CT head without contrast	4		⊗ ⊗ ⊗
CT head without and with contrast	4		⊗ ⊗ ⊗
MRA head with or without contrast	2		O
Arteriography cervicocerebral	2		⊗ ⊗ ⊗
CTA head with contrast	2		⊗ ⊗ ⊗
<u>Rating Scale:</u> 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level

ACR (American College of Radiology) appropriateness criteria, 2009

慢性頭痛, 有新症狀

Variant 2: Chronic headache with new features.

Radiologic Procedure	Rating	Comments	<u>RRL</u> *
MRI head without and with contrast	8	See statement regarding contrast in text under "Anticipated Exceptions."	O
MRI head without contrast	7		O
CT head without contrast	5	If new features highly suggestive of intracranial hemorrhage, see variant 3. If MRI unavailable or contraindicated.	⊕ ⊕ ⊕
MRA head with or without contrast	5	Selected cases when vascular disease suspected. See statement regarding contrast in text under "Anticipated Exceptions."	O
CT head without and with contrast	4	If MRI unavailable or contraindicated.	⊕ ⊕ ⊕
CTA head with contrast	4	Not generally appropriate for screening or first study. To be used in combination with CT. For problem solving.	⊕ ⊕ ⊕
Arteriography cervicocerebral	2	Not used as a primary diagnostic tool.	⊕ ⊕ ⊕
<u>Rating Scale:</u> 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level

突發劇烈頭痛，生平最痛

Variant 3: Sudden onset of severe headache (“Worst headache of one’s life”, “thunderclap headache”).

Radiologic Procedure	Rating	Comments	<u>RRL*</u>
CT head without contrast	9		⊕ ⊕ ⊕
CTA head with contrast	8	Usage of CT vs MRI depends on local preference and availability.	⊕ ⊕ ⊕
MRA head with or without contrast	8	Usage of CT vs MRI depends on local preference and availability. See statement regarding contrast in text under “Anticipated Exceptions.”	○
Arteriography cervicocerebral	7		⊕ ⊕ ⊕
MRI head without contrast	7	May be helpful after CT depending on CT findings.	○
MRI head without and with contrast	6	May be helpful after CT depending on CT findings. See statement regarding contrast in text under “Anticipated Exceptions.”	○
CT head without and with contrast	6		⊕ ⊕ ⊕
<u>Rating Scale:</u> 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level

非急性頭痛之神經影像檢查準則

台灣頭痛學會治療準則小組

中文摘要

本小組針對非急性頭痛患者安排神經影像檢查之適應症，以實證醫學的方式，評估過去文獻的品質、證據等級並參考歐美國家的相關準則，歷經數次討論與意見整合，提出共識。

非急性且反覆發作的偏頭痛或緊縮型頭痛，若頭痛特徵近期內無改變，且神經學檢查為正常時，影像檢查並非必要。非急性頭痛患者且有異常的神經學檢查，建議應接受影像檢查。對於被診斷為叢發性頭痛且從未接受過神經影像檢查或是有非典型症狀的叢發性頭痛的病人，應考慮做影像檢查。對於有咳嗽頭痛、運動頭痛(出力頭痛)及與性行為相關頭痛的病人，建議應接受影像檢查。

雖然磁振造影的敏感度優於電腦斷層，但目前無足夠證據來建議應選擇磁振造影或電腦斷層，醫師仍應根據病患個別的病況來判斷。

關鍵字：頭痛、電腦斷層、磁振造影

According to a meta-analysis, in patients with migraine but normal neurological examination, the prevalence of significant abnormality in brain image is 0.2 %. So the brain image is not recommended. (AAN, 2009)

Another meta-analysis in migraine with normal neurological examination, from 1988-1996

Cases: 790, then excluded 19 pts with longer aura and finally 771

Results: 4/771 (0.52%) had significant abnormal brain MRI.

(Radiology 2005; 235: 575-579)

What is significant abnormality in brain image?

- ❖ This abnormality is the definite cause of headache and we need to manage or treat it, such as cerebral infarct, ICH, brain tumor, hydrocephalus, AVM...

建議

- ❖ 非急性的反覆性偏頭痛患者, 如果頭痛特徵近期內無變化, 且神經學檢查為正常時, 影像檢查並非必要 (B)

緊縮型頭痛且神經學檢查正常

- ❖ 2 studies with total 83 nonacute tension type headache and normal N.E. patients, no significant abnormality in brain image.

(Sargent, *Headache* 1979; De Benedittis et al, *Headache* 1995)

- ❖ 665 pts Dx as tension type headache, 5/665 (0.8%) had significant abnormality in brain image. (Sempere, *Cephalagia* 2005)

建議

- ❖ 非急性的反覆性緊縮型頭痛患者, 如果頭痛特徵近期內無變化, 且神經學檢查為正常時, 影像檢查並非必要 (B)

叢發型頭痛(cluster headache)

❖ 叢發型頭痛的鑑診：

pituitary tumor

Carotid artery dissection

retro-orbital tumor

cavernous sinus lesion

❖ 診斷為叢發型頭痛，但從未接受過腦部影像檢查者，應考慮做影像檢查，且MRI優先(C)

未曾經歷過的新發生頭痛

- ❖ Secondary cause: 39/100 (39%)
(Duarte, Acta Neurol Scand 1996)
- ❖ Headache precipitated by cough, prolonged exercise or sex: secondary cause 59%, 18% and 11% respectively (mostly SAH).
(Pascual, J Headache Pain 2008)
- ❖ 83 consecutive cough headache, 10.8% had secondary cause
(Chen PK, Wang SJ et al, Cephalagia 2009)
- ❖ 50 headaches associated with sex, 2 (4%) were organic, SAH and carotid artery dissection respectively.

(Yeh YC, Wang SJ et al, Cephalagia 2010)

建議

對於咳嗽頭痛, 運動性頭痛和性行為誘發/加重頭痛, 應考慮做影像檢查 (C)

Take home message

- ❖ 頭痛是症狀,不是一個診斷.
- ❖ 大多數都是功能性頭痛.如偏頭痛,緊縮型頭痛,叢發性頭痛.
- ❖ 新發生頭痛又是未曾經歷過的強烈頭痛,咳嗽頭痛,運動性頭痛和性行為誘發/加重頭痛,診斷為叢發型頭痛,但從未接受過腦部影像檢查者,頭痛伴有異常神經理學檢查時,應考慮做影像檢查