



# 急性腦中風的診斷

# 急性腦中風的診斷

1. 臨床症狀懷疑中風
2. 腦部影像確認

# 供應腦部的血管

\* **Internal Carotid a.** (內頸動脈)

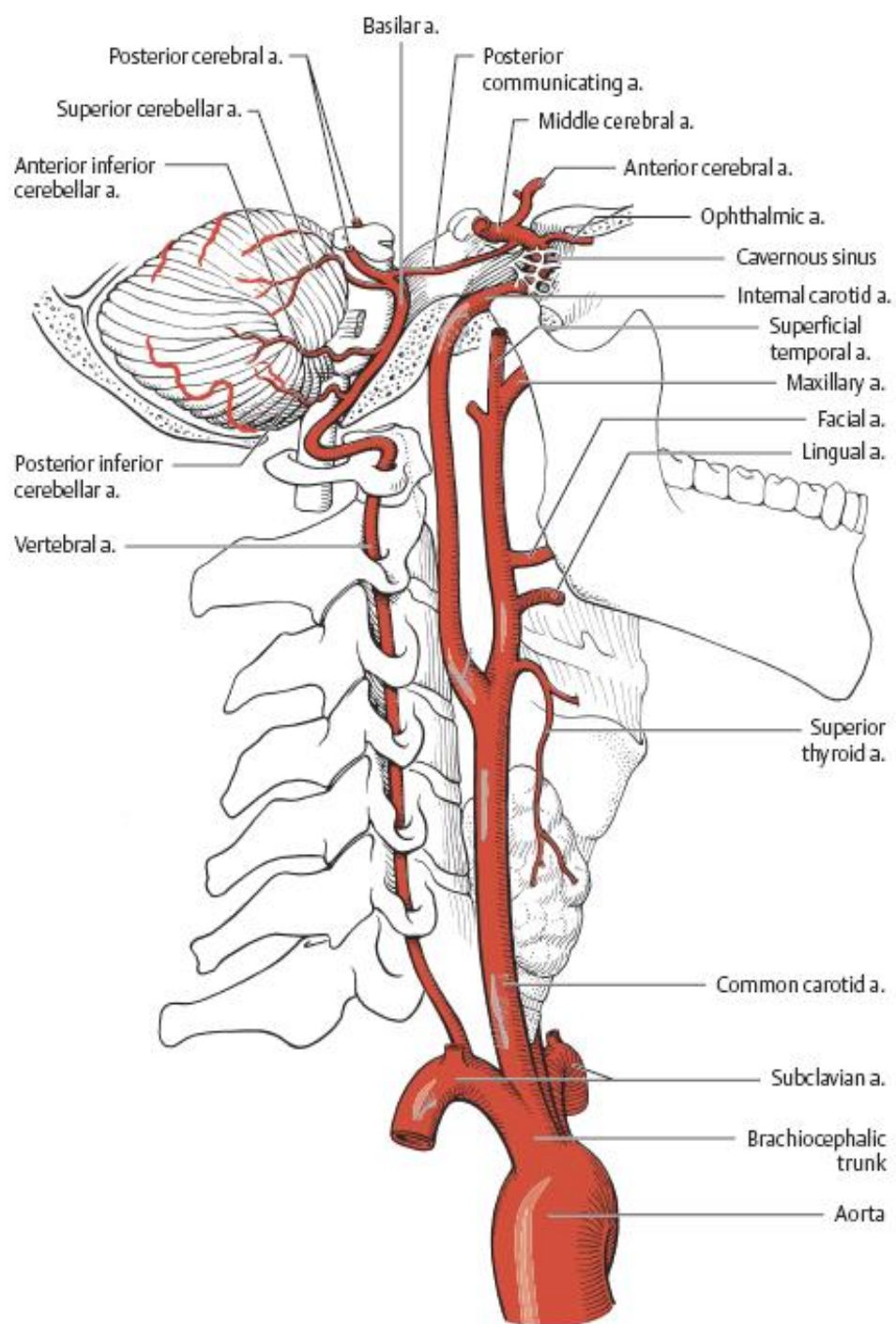
\* **Anterior cerebral a. (ACA)**  
(前大腦動脈)

\* **Middle cerebral a. (MCA)**  
(中大腦動脈)

\* **Vertebral and Basilar a.**  
(椎動脈、基底動脈)

\* **PICA, AICA, SCA**

\* **Posterior cerebral a. (PCA)**  
後大腦動脈



# 供應腦部的血管

\* Internal Carotid A (ICA).

(內頸動脈)

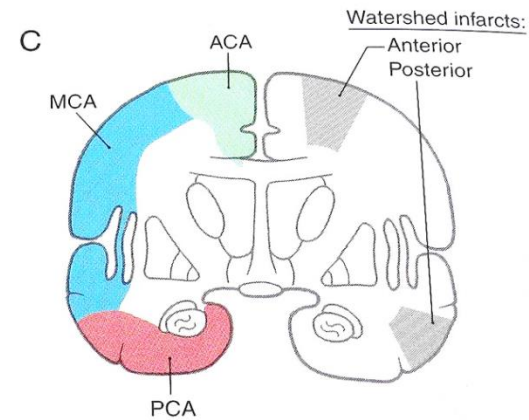
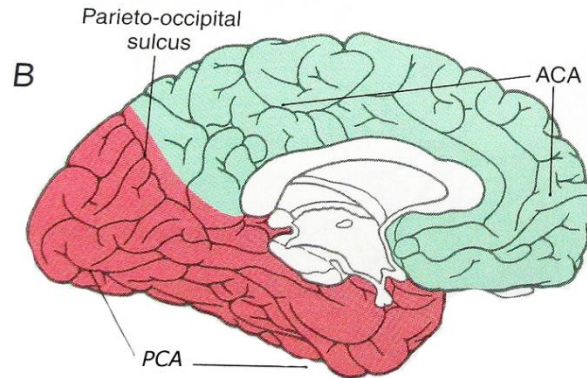
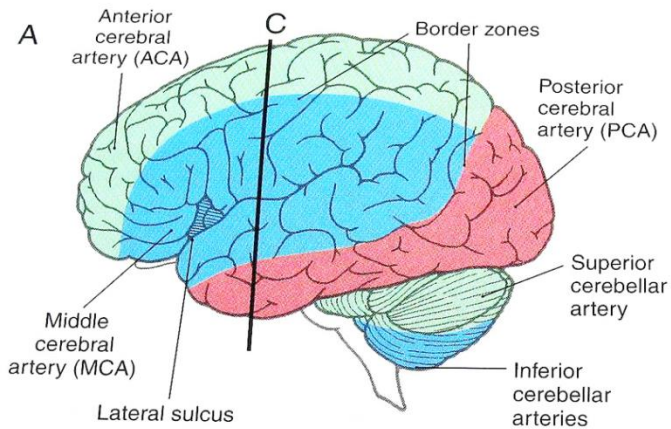
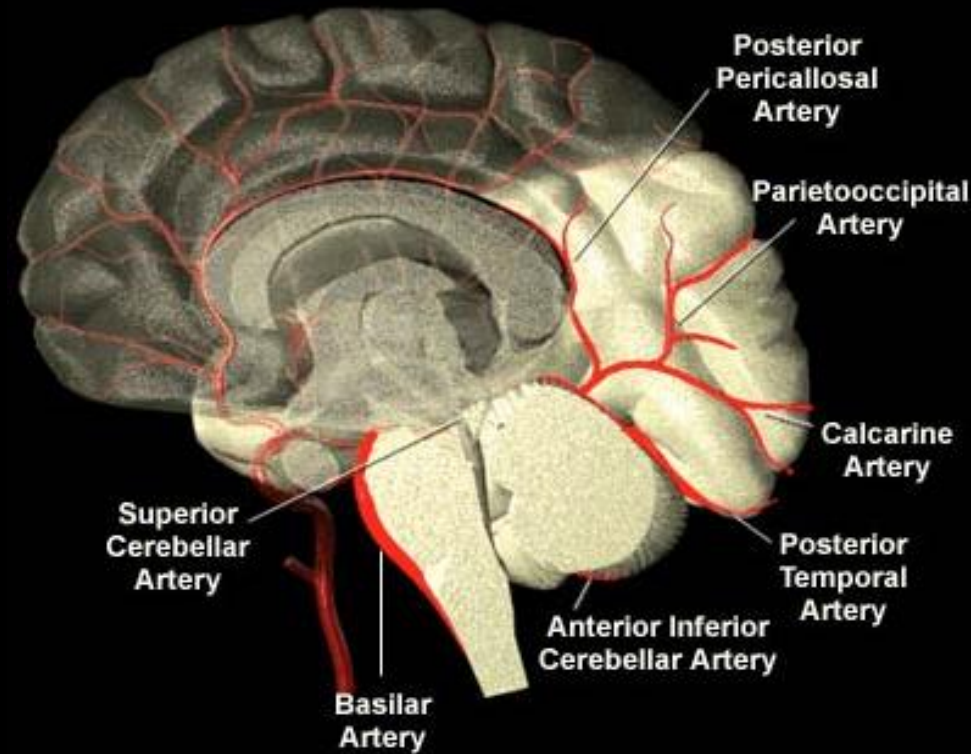
\*前大腦動脈 (ACA)

\*中大腦動脈 (MCA)

\*椎動脈 (VA)、基底動脈 (BA)

PICA, AICA, SCA

後大腦動脈 (PCA)

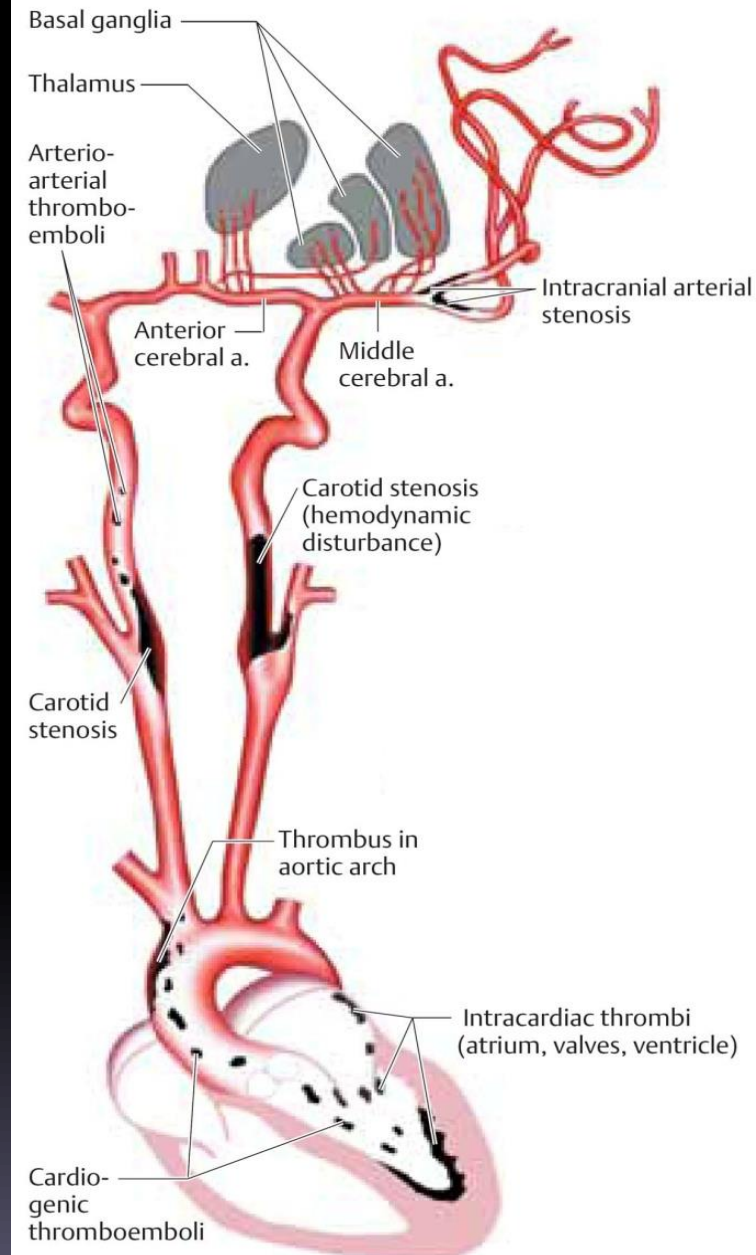


# 中風的分類

## Ischemic stroke

(缺血性中風, 70~85%)

- Thrombosis
- Embolism
  - Cardiac:
  - Extra-cranial or
  - Intra-cranial arterial
- Cerebral hypoperfusion
  - Cardiogenic shock: AMI, arrhythmia
  - Neurogenic shock
  - Hypovolemic shock
  - Septic shock
  - Hypoxia: pulmonary embolism



Sources of thromboembolism



# 中風的分類

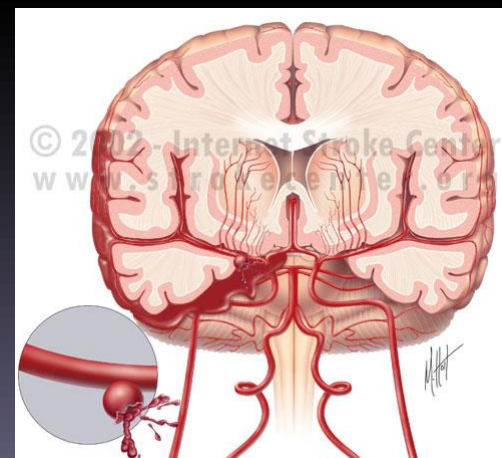
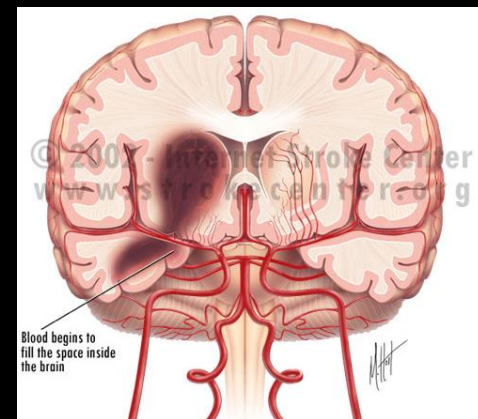
## Hemorrhagic stroke (出血性中風)

### ■ Intracranial hemorrhage (ICH) : 10~25%

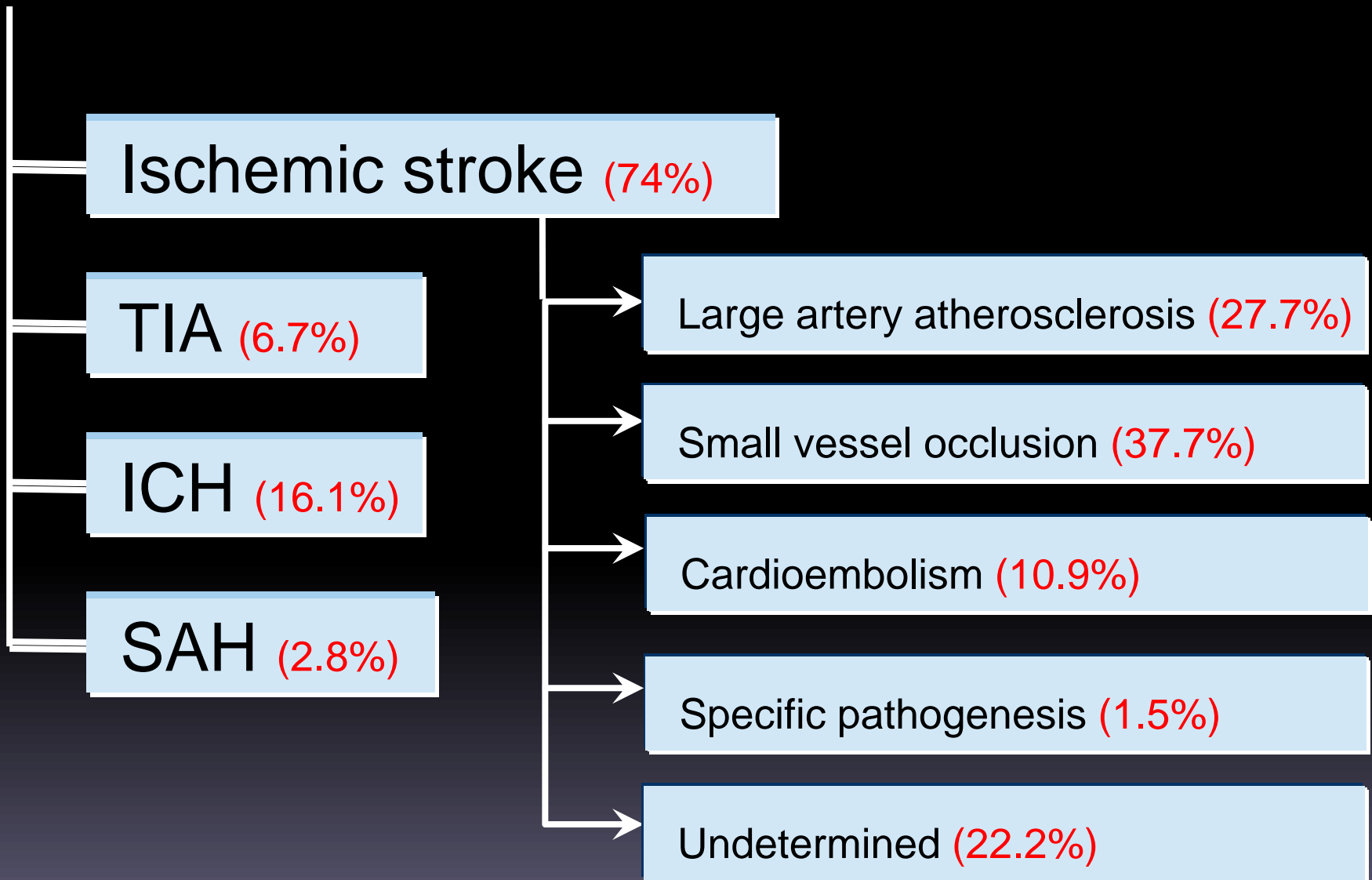
- Hypertension
- Bleeding tendency
- Angiopathy
- Drugs

### ■ Subarachnoid hemorrhage (SAH): 5%

- Aneurysm / AVM



# Acute stroke in Taiwan



# 急性腦中風的診斷

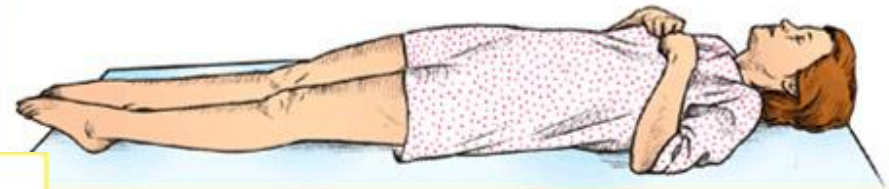
1. 臨床症狀懷疑中風
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# Glasgow Coma Scales

Eye		Verbal		Motor	
Spontaneous	4	Oriented	5	Obeys commands	6
Verbal stimuli	3	Confused	4	Localized	5
Pain only	2	Inappropriate words	3	Withdraw	4
No response	1	Incomprehensible speech	2	Flexion (decorticate )	3
		No response	1	Extension (decerebrate )	2
				No response	1

**Decorticate (M3)**

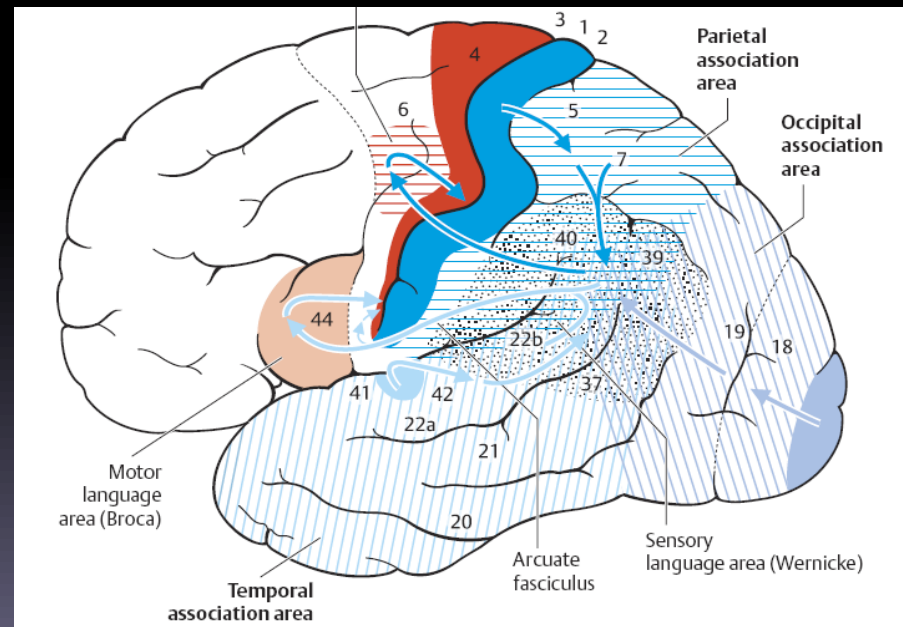


**Decerebrate (M2)**



# Clinical Presentations of Acute Stroke

- **Aphasia(失語症)**, Dominant hemisphere(usually L)
  - Impairment in **Naming(命名)**, **Comprehension(理解)**, **Fluency(流暢)**, and **Repetition(複誦)**
    - Motor aphasia (Broca): naming, fluency, repetition X
    - Sensory aphasia (Wernicke): naming, comprehension, repetition X
    - Global aphasia: all X



# Clinical Presentations of Acute Stroke

## ■ Facial weakness or asymmetry

- Paralysis of facial muscles (e.g., say E or Wu)
- Central facial palsy → hemisphere
- Peripheric facial palsy  
→ brain stem or peripheral facial nerve



# ||| Clinical Presentations of Acute Stroke

- **Dysphagia** (吞嚥困難) More difficult in drinking water
- **Dysarthria** (言語困難)
- 觀察病人說話是否口齒不清、詢問是否吃東西會噎到。  
→ if severe dysphagia and dysarthria, consider brain stem stroke

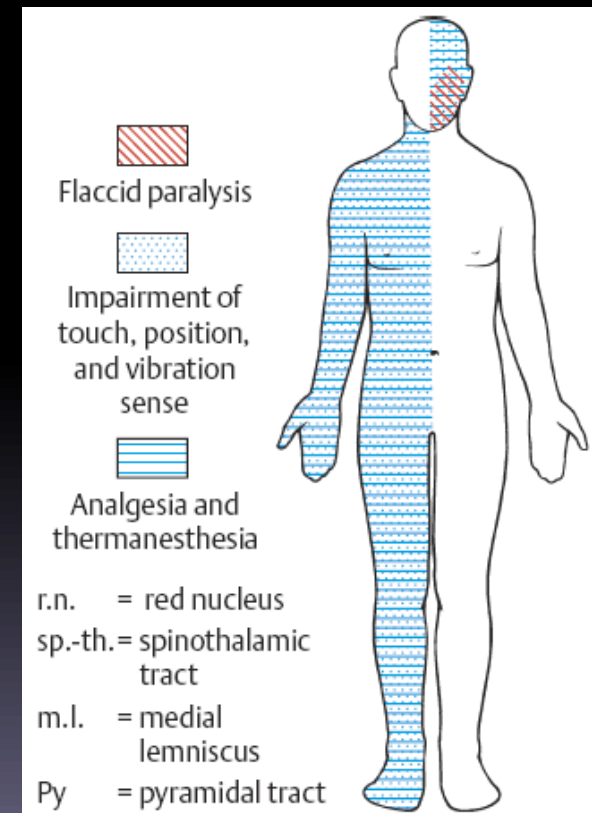
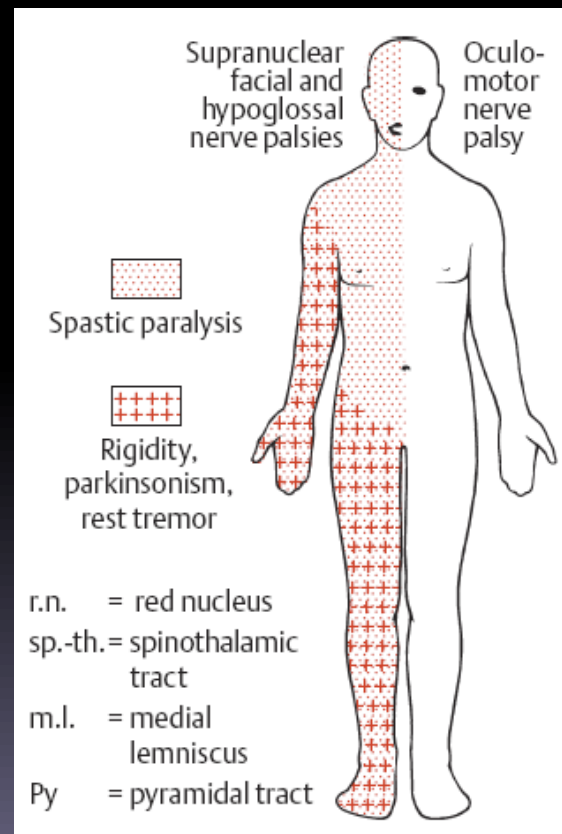
# Clinical Presentations of Acute Stroke

- **Weakness or paralysis (無力或癱瘓)**
    - Obvious weakness?  
Muscle power?
    - Pronator drift? Grasping?
    - Gait?
- ➔ Usually the same side



# Clinical Presentations of Acute Stroke

- **Sensory impairment(感覺異常) or numbness (麻)**
  - Usually one half of the body and in particular the hand



# ||| Clinical Presentations of Acute Stroke

- **Incoordination (不協調) or Ataxia (運動失調)**
  - Poor balance, wide base gait
  - Limbs clumsiness
    - Finger-Nose-Finger or Heel-Knee-Shin test →  
dysmetria



# Clinical Presentations of Acute Stroke

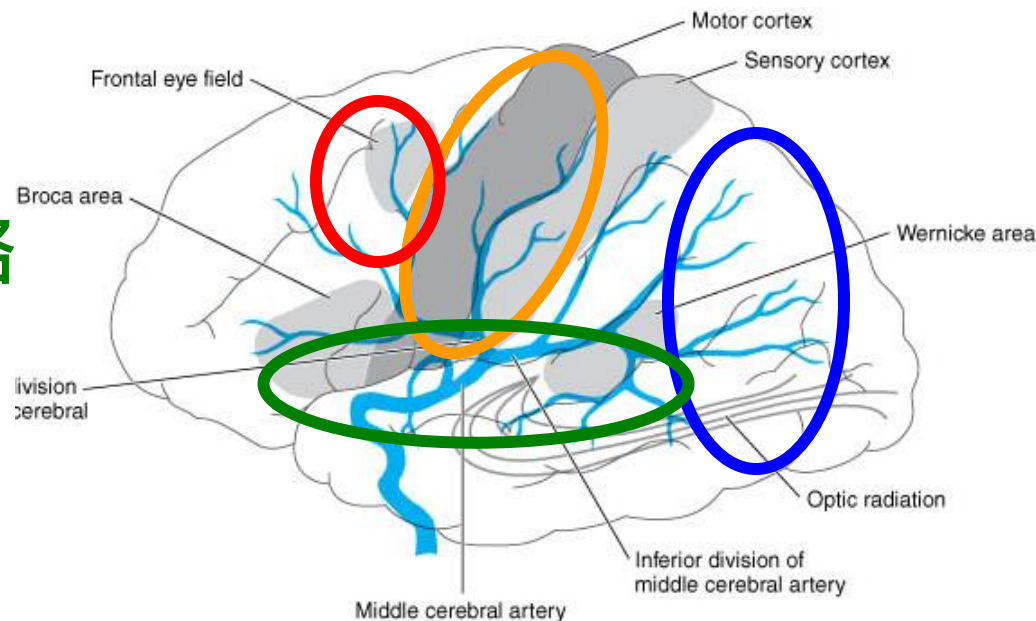
- **Headache (SAH or ICH)**
  - Intense or unusually severe
  - Associated with decreased level of consciousness/neurological deficits
  - Unusual/severe neck or facial pain
  - Headache
- **Nausea, vomiting, photophobia, or phonophobia**

# 大範圍中風的臨床表現

- 意識不清
- 單側肢體明顯無力或癱瘓
- 單側視野偏盲
- 眼睛偏向一邊
- 失語症 或 單側忽略

(左腦)

(右腦)



# 辨別中風口訣 (FAST)

hehō

f Heho健康

**F**ace



臉部表情  
不對稱

**A**rm



一側手臂  
無力垂下

**S**peech



說話含  
糊不清

**T**ime



立刻就醫並  
記下發病時間



**G**

Gaze in  
only one  
direction



**F**

Face/  
facial  
droop



**A**

Arms/  
legs weak



**S**

Speech  
slurred,  
confused



**T**

Time lost  
is brain lost

## Gaze 眼球運動

觀察病人眼球是否偏向一邊

(如果眼睛無法張開，請用手指將眼瞼打開觀察。)

Gaze(+) and G-FAST  $\geq 2$  可能為大血管阻塞

# NIHSS (National Institute of Health Stroke Scale)

- 為缺血性腦中風治療之臨床研究計畫，所設計出來的一個標準化神經學檢查量表。

~ Goldstein LB, et al. Arch Neurol 1989

- Maximum score is 42, signifying severe stroke
- Minimum score is 0, a normal exam
- ✓ Evaluate the stroke severity
- ✓ Provide rationale ED use of t-PA and IA thrombectomy
- ✓ Predict outcome

<b>1</b>	<b>a</b>	意識障礙程度	清醒	0
			嗜睡	1
			渾沌（半昏迷）	2
			昏迷	3
	<b>b</b>	意識障礙：回答問題 1. 你今年幾歲？ 2. 現在是幾月？	答對兩個	0
答對一個			1	
兩個都答錯			2	
	<b>c</b>	意識障礙：照命令做動作 1. 眼睛睜眼或閉上 2. 左手（右手）握拳；放鬆	兩個都做對	0
只做對一個			1	
兩個都做錯			2	
<b>2</b>		眼球運動	正常	0
			部份麻痺	1
			完全偏向一邊	2
<b>3</b>		視力	無喪失	0
			部份偏盲	1
			完全偏盲	2
			兩側完全偏盲	3
<b>4</b>		顏面麻痺	正常	0
			輕度麻痺	1
			部份麻痺	2
			半側完全麻痺	3

5	左上肢運動	正常 輕度無力 無法抵抗加重力 無法抵抗重力 無法動彈	0 1 2 3 4
6	右上肢運動	正常 輕度無力 無法抵抗加重力 無法抵抗重力 無法動彈	0 1 2 3 4
7	左下肢運動	正常 輕度無力 無法抵抗加重力 無法抵抗重力 無法動彈	0 1 2 3 4
8	右下肢運動	正常 輕度無力 無法抵抗加重力 無法抵抗重力 無法動彈	0 1 2 3 4



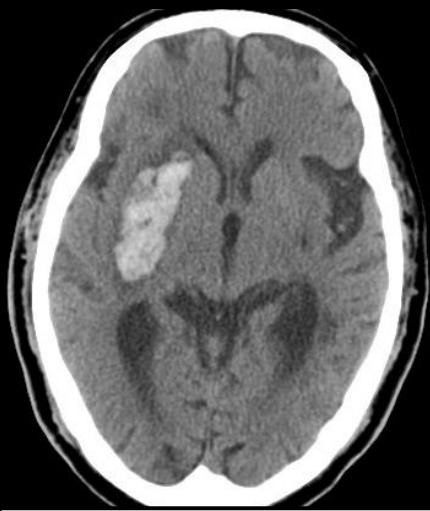
9	肢體動作不協調	無（正常） 僅有上肢或下肢 上下肢或兩側均有	0 1 2
10	感覺障礙 （痛覺、觸覺或空間感覺）	無障礙 部份障礙 完全喪失感覺	0 1 2
11	言語障礙	正常 輕至中度障礙 嚴重障礙 完全無法言語	0 1 2 3
12	構音障礙	正常 輕至中度障礙 完全無法構音	0 1 2
13	感覺忽視（大腦皮質功能病變， 喪失兩側同時刺激分辨感、空間 感、病識感）	無障礙 部份忽視 完全忽視	0 1 2

# 急性腦中風的診斷

1. 臨床症狀懷疑中風
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# Computed tomography (CT) 電腦斷層

- 未注射顯影劑之CT，為目前第一線診斷之檢查，有方便快捷之優點，腦出血可以清楚辨識。



R putaminal hemorrhage



Pontine hemorrhage



R Cerebellar hemorrhage



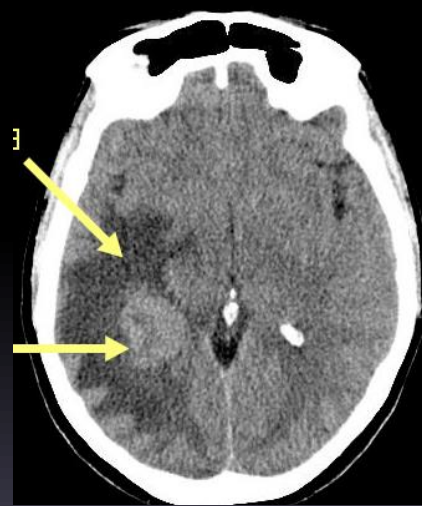
SAH

# Computed tomography (CT) 電腦斷層

- 可識別其他病灶導致，排除非腦中風的病人。



硬腦膜下出血



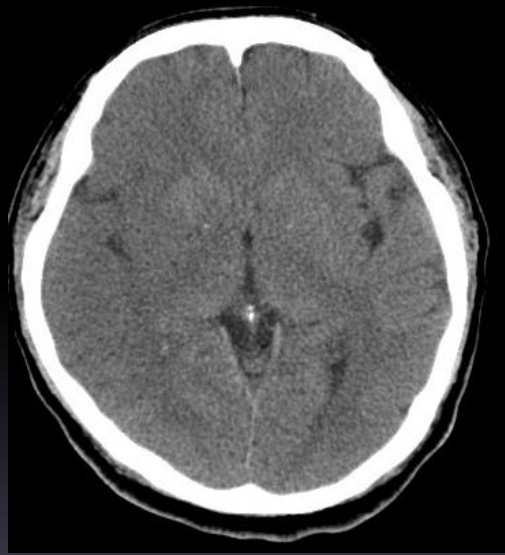
腫瘤合併腦水腫



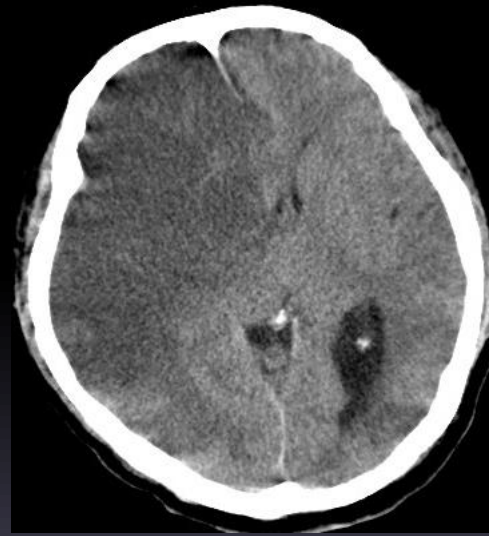
水腦

# Computed tomography (CT) 電腦斷層

- 急性缺血性腦中風(梗塞)，中風剛發生幾小時內，CT無法辨識。



中風 6 小時



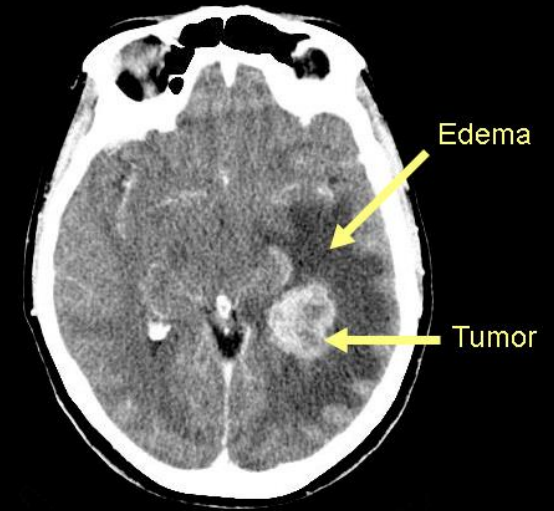
中風 36 小時

# 進一步的影像檢查

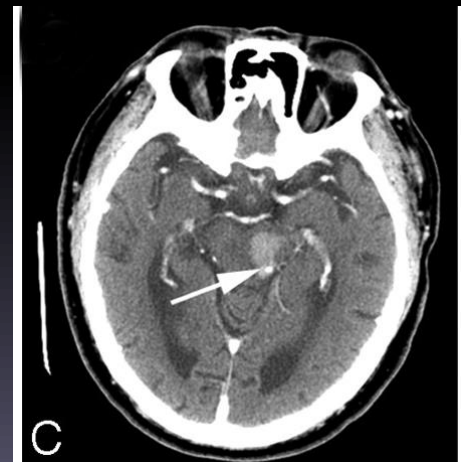
- CT angiography / CT perfusion
- Magnetic Resonance Imaging (MRI)(核磁共振影像)
  - MR angiography (TOF or contrast angiography)
  - MR perfusion imaging (核磁灌注影像)
- Digital Subtraction Angiography (數位減像血管造影術)

# CT with enhancement (注射顯影劑)

- 鑑別是否為腫瘤、血管病灶。



- 出血性腦中風是否有血管病灶，預測出血是否惡化。

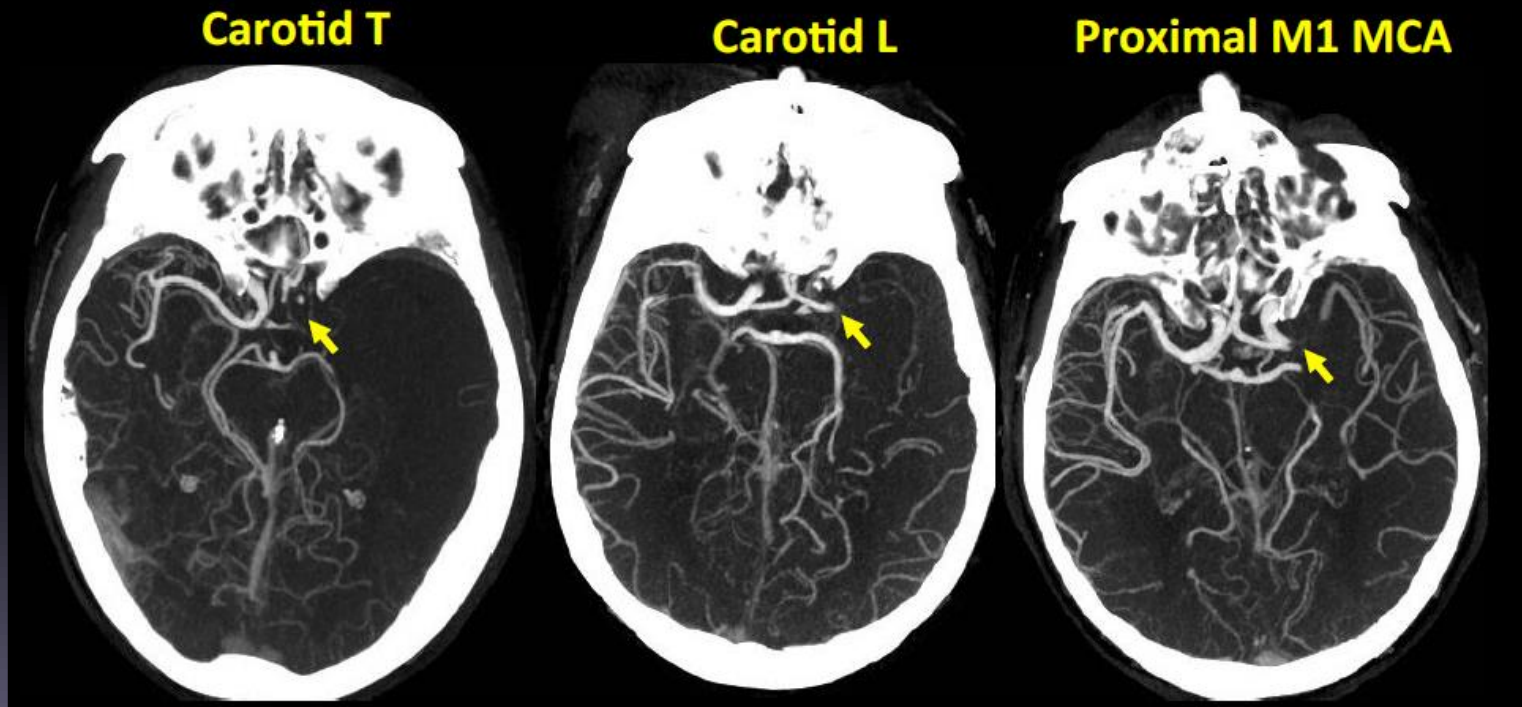


Contrast extravasation



# CT angiography

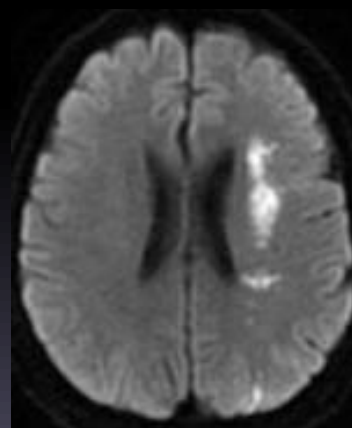
- 需注射顯影劑。
- 評估腦部血管、灌流狀態，確認阻塞的位置。



# Magnetic Resonance Imaging (MRI)

- 診斷中風最重要的檢查之一。
- 包含各種序列影像，提供不同的診斷資訊。

- 
- Diffusion weighted imaging (DWI)，可清楚看到急性梗塞位置。



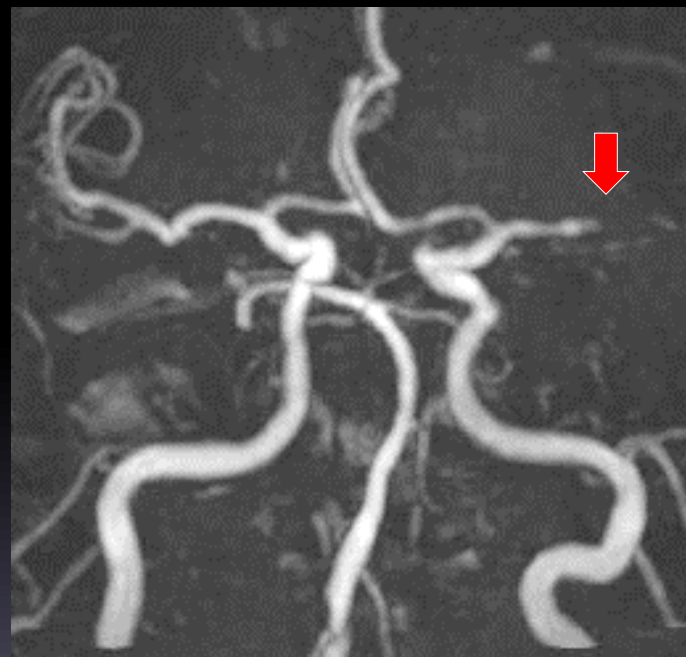
左側中大腦動脈範圍梗塞

# Magnetic Resonance Imaging (MRI)

- Time of Flight (TOF) angiography  
不需要顯影劑，即可得到大動脈影像



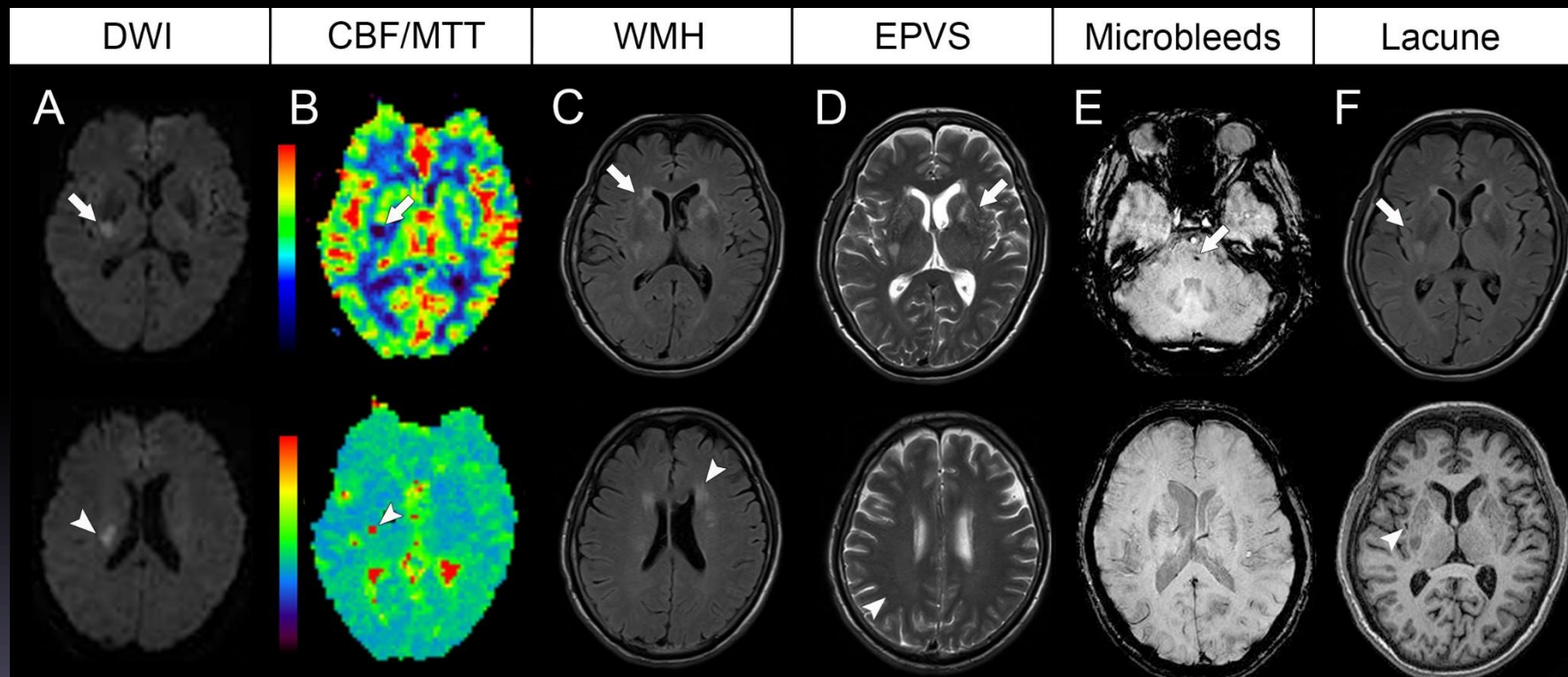
基底動脈阻塞



左側中大腦動脈阻塞

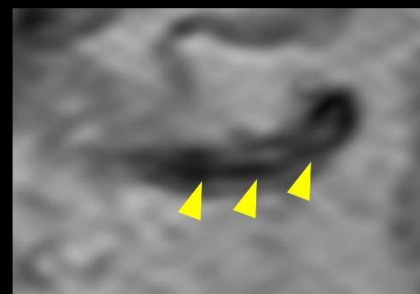
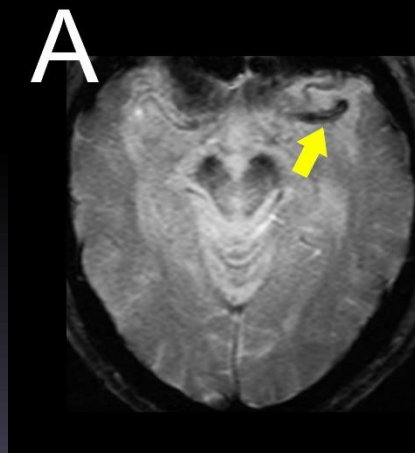
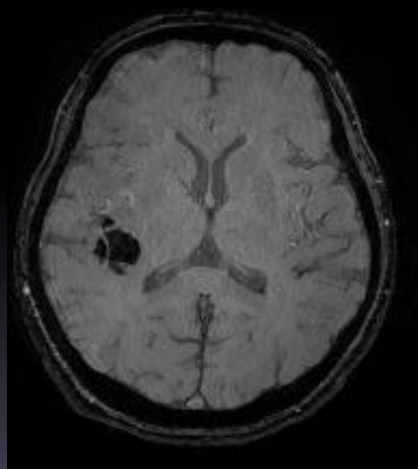
# Magnetic Resonance Imaging (MRI)

- 評估常見的小血管阻塞和中風機轉



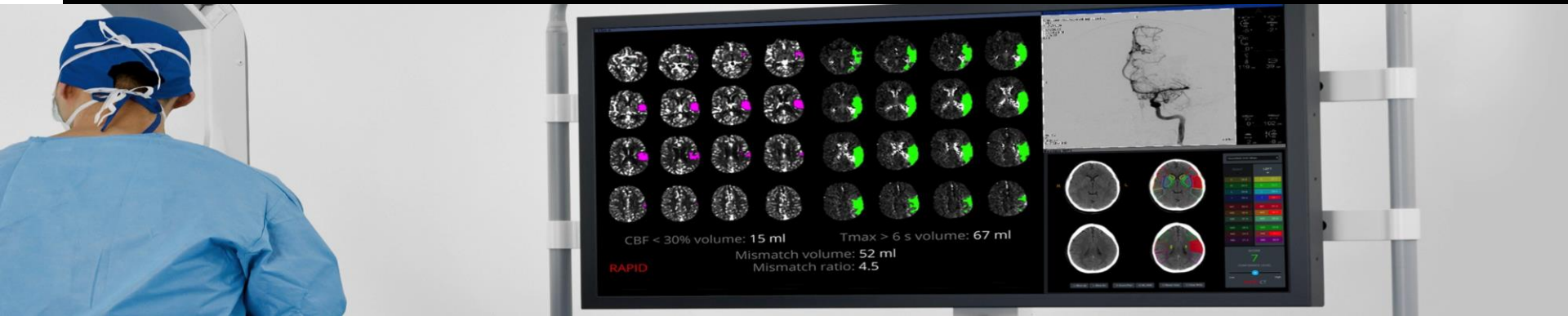
# Magnetic Resonance Imaging (MRI)

- Gradient echo imaging
- 評估出血性病灶位置和機轉，是否有動脈血栓，或是靜脈疾病。



左側中大腦動脈血栓

# 本院使用的影像灌流分析軟體 - **RAPID**



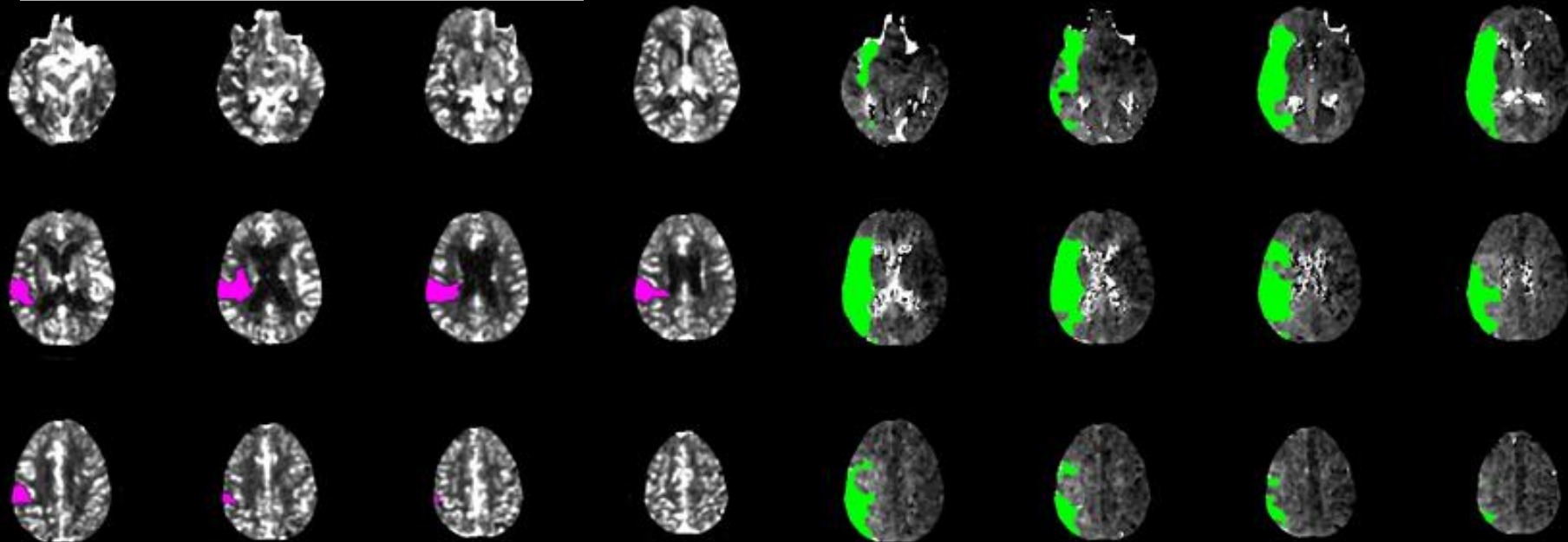
- 快速全自動處理 (30 sec – 2 min)
- 可以分析CT or MR 灌流影像
- 灌流影像精確量化缺血性腦中風的側枝循環
- 目前多用於評估是否接受 EVT



# RAPID CTP

預測目前梗塞的範圍

預測未來會梗塞的範圍



CBF (<30%) volume: 14.9 ml

Perfusion (Tmax>6.0s) volume: 105.4 ml

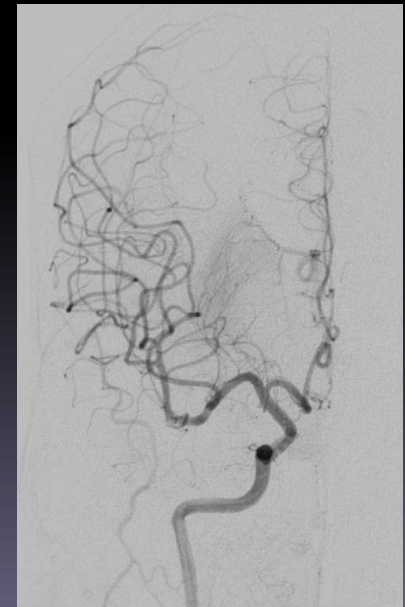
Mismatch volume: 90.5 ml  
Mismatch ratio: 7.1

預測可以拯救的腦部體積



# Digital Subtraction Angiography

- 傳統的腦血管攝影，侵襲性檢查，必須在較大的靜脈或動脈置入導管後，將導管延伸到適當的部位，然後注射顯影劑進行照相。
- 對血管具有最佳的解像力，且可評估動態血流狀態。
- EVT 治療需執行傳統的血管攝影。





**The End**

