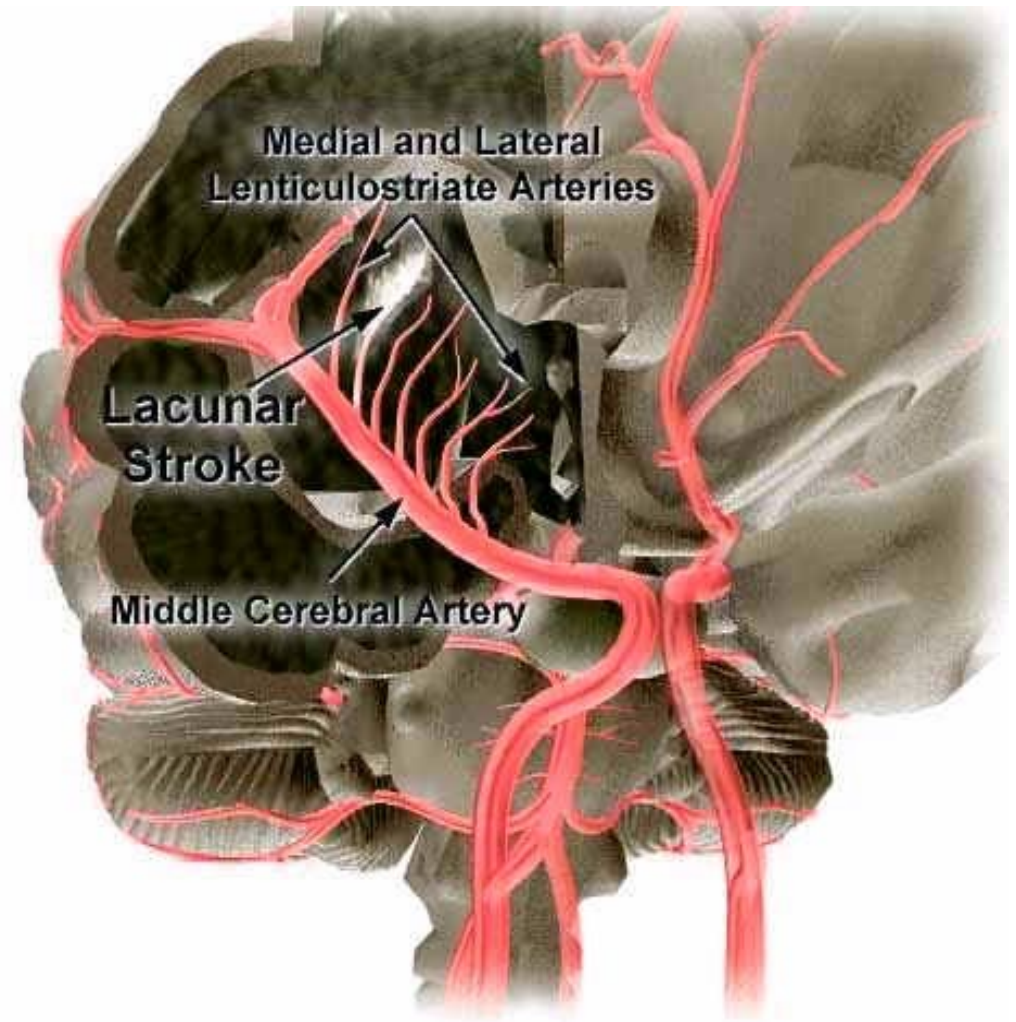


短暂性脑缺血发作 (小卒中)TIA



短暂性脑缺血发作 (小卒中) *TIA*

- 被视为“中风预警，是预防脑中风的好机会”

Regarded as “A warning event that provide an opportunity for stroke prevention”

短暂中风（TIA）的处理

- 主要的目的是避免或减少中风的发生。
- 病人的症状和病症已经消退。

The primary aim of our management is to minimize stroke occurrence.

A patient arrives at ED with a history suggestive of a recent TIA. Now asymptomatic and without any CNS signs

短暂中风（TIA）的处理

1. 需要入住医院吗？
2. 还是留在急诊科处理呢？
3. 离开急诊室後的跟进。

- To admit or not to admit, inpatient or outpatient management? Or ED management?

- Who should be admitted, why?

- Those not admitted, what to be done for them?

- 六年前，早上九時零五分，一位醫生好朋友，跑到瑪嘉烈醫院急症室跟我講 " - - - -
-， - - - - "

Epidemiology 传染病学

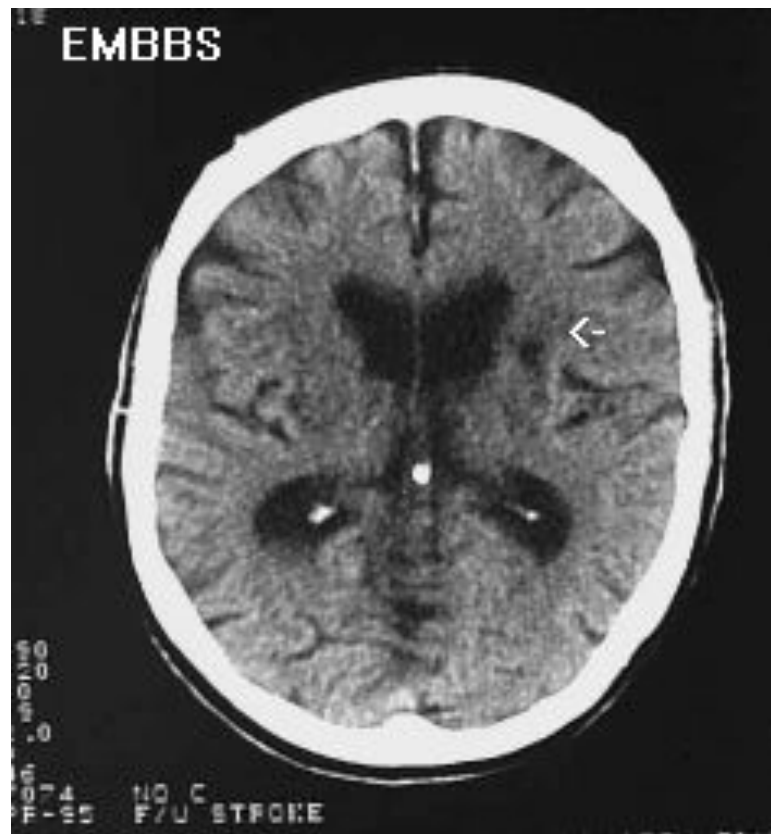
在中国

- 缺血性中风 62.4%
- 出血中风 27.5%
- SAH 和其他 10%

•in China, ischemic stroke higher in proportion than hemorrhagic stroke. 62.4% cerebral infarction, 27.5% intracerebral haemorrhage. Others: SAH and undetermined.

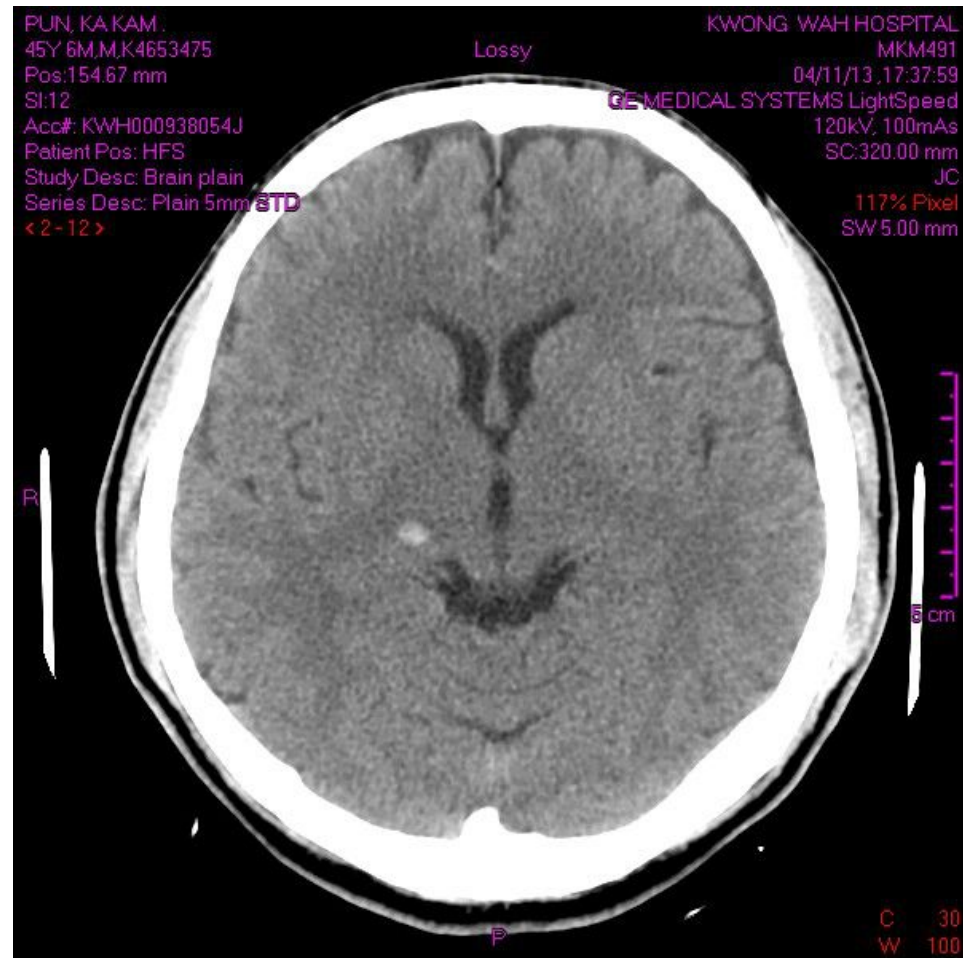
Stroke. 2003;34:2091-2096

Common CT brain TIA



TIA /minor stroke

- A rare case
- 45 yr old man presented with L sided numbness
- no aspirin given



一些背景Stroke subtypes

- TOAST classification:

LAD大血管病; SVD小血管病;

cardioembolic and undetermined

(*Stroke* 1993;24:35-41)

- extracranial 脑外 or intracranial
stenosis脑内

- ECAS, ICAS, small vessels disease,
AF and presumed cardioembolic,
undetermined

Epidemiology 传染病学

Asians : intracranial arterial stenosis (ICAS) and small vessel disease more prevalent, Caucasians/white extracranial stenosis (ECAS) more prevalent.

ICAS significantly higher in Northern China than Southern China. (*stroke*. Aug 2013)

中国人或亚洲人颅内血管狭窄(ICAS)和小血管病多

中國人小血管病較西方人普遍及多

西方人颅外动脉狭窄(ECAS)普遍

一些背景

- 急诊对TIA断症的准确度较低, 55% non vascular

(Ferro. *Stroke*.1996;27:2225-2229)

转介到TIA clinic 的，43% 并不是TIA。

(A Ray. *Stroke*.2009;40:e467)

- 一向以来, TIA 的处理, 差距颇大, 并不划一

(Johnston *JAMA*. 2000;284(22):2947. *Eur Neurol*. 1999;42:105-108)
from referral to neurologist outpatient clinic to ED
management to immediate hospitalization, or fast-track clinic
immediately attended by neurologist.

一些背景 stroke risk after TIA

- The short term (2,7,90 day) stroke risk is high after a TIA in White populations **10 - 20%**在随后的90天内中风 (Rothwell *Lancet* 2005;366:29-36, Johnston *Lancet* 2007;369:283-292) .

- Tx and medical or surgical treatment is urgent to lower the stroke risk (Rothwell *Lancet* 2011; 377: 1681-92)

- Good collateral compensation in patients with symptomatic Intracranial Atherosclerosis are associated with favourable outcome and less recurrence risk

如果颅内经过 **leptomeninges**的 **collateral** 血管流通良好, 有助较好的复完, 和减少再中风的机会。

(A Lau et. *Cerebrovasc Dis* 2012;33:517- 524)

一些背景

- 西方人**TIA** 的数据， 可以申延至中国人或亚洲人吗？
 - 我们还未有一个前瞻性的TIA预后短期中风风险研究，中风风险率较白种人高还是低？
 - 不给aspirin 处方，来作前瞻性研究，今天可能有违医学道德
-
- Can the Caucasian results be extrapolated to ethnic Chinese?
 - No prospective study in stroke risk after TIA. Dilemma : A prospective study withholding treatments to look for stroke to occur after TIA is not ethical.

两个争议 **Current controversies**

争议 1. **TIA** 的定义 :

以时间为基础的定义 (24 小时)

Vs

建议以脑组织为基础的定义

争议 2. 应否把所有临床诊断的**TIA**入住医院

两个争议 Current controversies

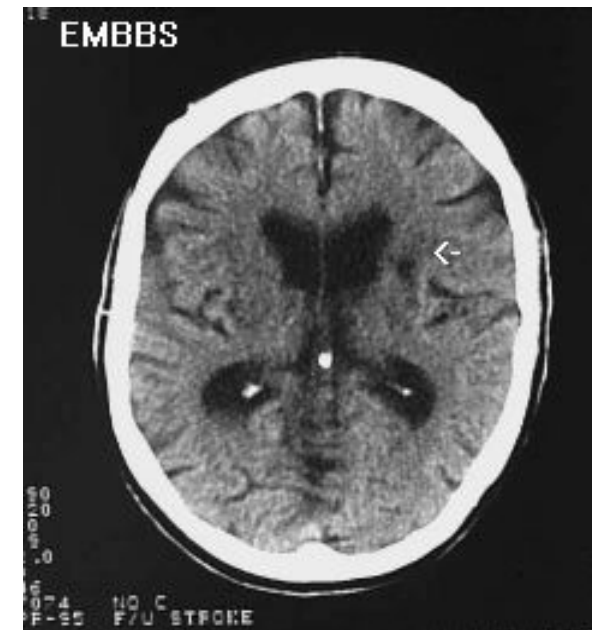
争议(1)

TIA 的定义：

以时间为基础

Vs

以脑组织为基础 (影像)



两个争议 Current controversies

24 小时的定义

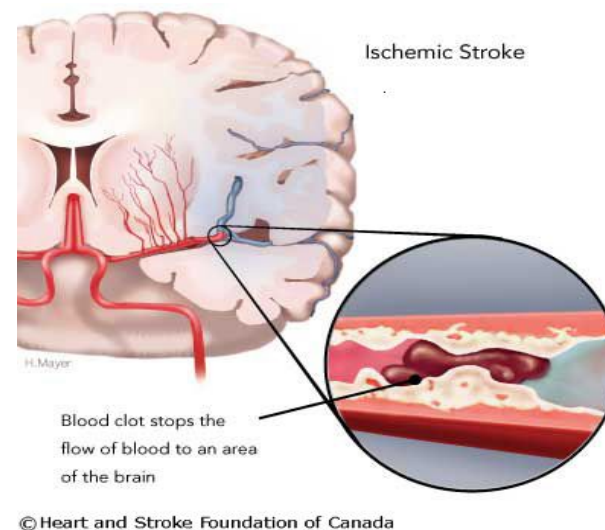
- TIA是1975 年arbitrary 的定义, 症状少於24 小时的定义受到很大的挑战 (*NEJM*. 2002;347:1713-1716) °
- 今天TIA 和minor stroke 已经包括在一起 (*Stroke*. 2009;40:2276-2293)
- some with infarct, they recovered completely, some with no evidence of infarct in CT or MRI do not have a complete recovery
- The time base of definition of TIA is arbitrary. 1975, at the time this definition was formulated
 - : no neuro-diagnostic techniques to assess injury to brain parenchyma.
 - : no effective treatments for acute stroke or for stroke prevention
- The definition of TIA and minor stroke more blurred and are mixed together and receive the same treatment (AHA/ National Stroke Association)

两个争议 **Current controversies**

争议 (2)

应否把所有临床诊断的TIA马上住院

Should all clinically diagnosed TIA be hospitalised immediately?



赞成住院 (1)

Michael D. Hill, David J. Gladstone, (*Stroke*, 2006; 37:1137-1138)

- 像ACS和其他血管疾病，TIA 是高风险和不稳定 Like ACS and other vascular diseases, high risk, and unstable
- 10 - 20%在随后的90天中风 10- 20 % stroke in the ensuing 90 days (as Rothwell says)

Johnston SC, Short-term prognosis after emergency department diagnosis of TIA. *J Am Med Assoc*, 2000, 284:2901-2906

Hill MD, The high risk of stroke immediately after transient ischemic attack; a population-based study, *Neurology*, 2004;62:2015-2020

Eliasziw M, Early risk of stroke after a transient ischemic attack in patients with internal carotid artery disease. *CMAJ*, 2004;170:1105-1109.

Gladstone DJ, Management and outcomes of transient ischemic attacks in Ontario. *CMAJ*, 2004;170:1099-1104.ref1-4

住院可以

1. 加快诊断 Expedite diagnostic evaluation
2. 随时获得溶栓 Ready access to thrombolysis
3. 尽早颈动脉血管重建 Facilitation of early carotid revascularisation
4. 是改进风险因素的机会 Greater opportunity for risk factor modification

赞成住院 (2)

Michael D. Hill, David J. Gladstone, (*Stroke*, 2006; 37:1137-1138)

外科手术

- 欧洲颈动脉手术试验及北美症状性颈动脉内膜切除术试验研究：

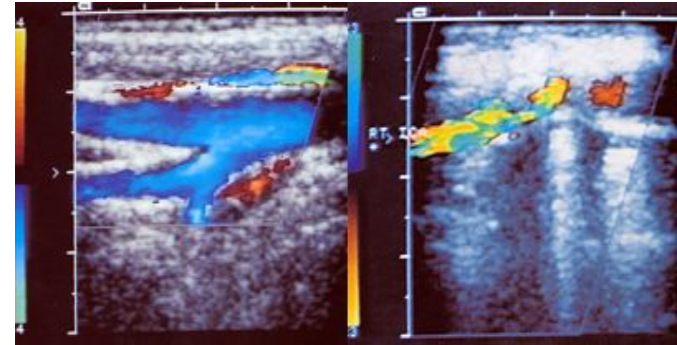
European Carotid Surgery Trial and North American Symptomatic Carotid Endarterectomy Trial studies :

- 手术最有效TIA <2周内进行
5年防止中风1个，NNT= 5

如果 手术延迟 至> 12周，NNT= 125。

**Surgery is most effective when performed
2 weeks of the index ischemic event,
NNT to prevent 1 stroke in 5 years =5 , if
surgery delayed >12 week, NNT = 125.**

Rothwell PM, Endarterectomy for symptomatic carotid stenosis in relation to clinical subgroups and timing of surgery.
Lancet .2004; 363:915-24



赞成住院 (3)

Michael D. Hill, David J. Gladstone, (*Stroke*, 2006; 37:1137-1138)

- **抗凝**Anticoagulation -- **有赞成房颤TIA患者抗凝至INR2.5**
Some favour early anticoagulation of TIA patients with atrial fibrillation till a target INR of 2.5
- **抗血小板**Antiplatelets
 1. **中国人急性卒中试验（1997年）在48小时内服用阿司匹林，可降低绝对风险为1%** Chinese Acute Stroke Trial (CAST *Lancet* 1997)
with an absolute risk reduction of 1% when aspirin is given in the first 48 hours.
 2. Management of Atherothrombosis with clopidogrel in High-risk patients (MATCH *Lancet* 2004) – if enrolled < a week, risk of recurrent stroke substantially reduced with double antiplatelet therapy. No risk reduction when enrolled later.
 3. Fast Assessment of Stroke and TIA to Prevent Early Recurrence (FASTER *Cerebrovasc Dis* 2003) double antiplatelet therapy and a statin useful in the hyperacute stage after TIA or minor stroke.

不赞成住院 (1)

Richard I. Lindley (*Stroke*.2006 37:1139-40)

- 不稳定的，需要复杂护理的才需要住院医疗

Inpatient is for medically unstable, dependent, and complex care unfeasible or unavailable elsewhere

- 应安排尽早“一站式”TIA门诊作为替代

Early access to “one-stop” TIA clinic is an alternative

(as Fernandez and Rothwell’s EXPRESS phase 2 clinic, patient seen on the same day, and 24 hr SOS-TIA clinic)

(antiplatelets can be started as soon as possible once haemorrhage is excluded by CT brain in ED)

不赞成住院 (2)

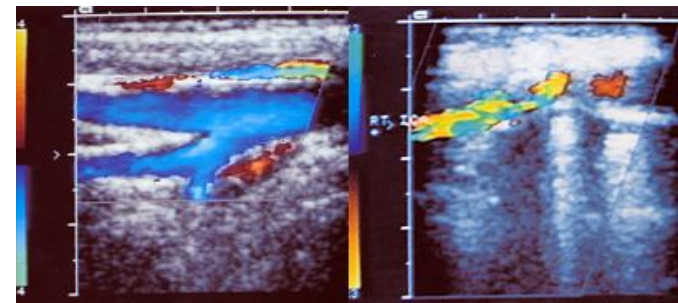
Richard I. Lindley (*Stroke*.2006 37:1139-40)

- 1 / 3的病人转介并不是脑血管疾病。
1/3 of the referrals do not have cerebral vascular disease.
- Trained personnel are vital, the more senior personnel more preferred over the less experienced staff in ER.

不赞成住院 (4)

Richard I. Lindley (*Stroke*.2006 37:1139-40)

- 门诊 - 更多的成本效益
Outpatient -- More cost effective
- 避免病人现代医疗的医源性灾害，例如深静脉血栓，诺如病毒疫情，MRSA，失调的体弱老人等
Help patient avoid those iatrogenic disaster of modern medicines
e.g. DVT, epidemic norovirus, MRSA, deconditioning of old frail lady, etc.



deconditioning of old frail lady etc.)

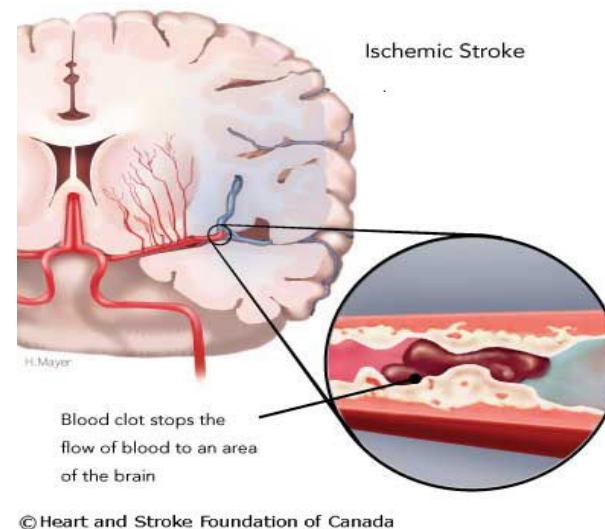
不赞成住院 (3)

Richard I. Lindley (*Stroke*.2006 37:1139-40)

- **可以在门诊检查** Ix can be done outpatient
体重，验血，心电图，脑成像，超声心动图，颈动脉扫描
Wt, BW, blood tests, ECG, brain imaging, selected use of echocardiography and carotid scanning.
诊所 - 更多隐私，见亲属，生活方式管理和药物治疗适当的意见 Clinic – more privacy, see relatives, proper advice on lifestyle management and medication possible
- **重要的颈动脉狭窄，只是少数，可以快速转介血管队**
Significant carotid stenosis, a minority, can be fast-track to vascular team.
- **住院治疗 and 门诊治疗的结果没有任何区别，只要不延误**
Hospital treatment and outpatient treatment make no difference in outcome so long there is no delay.

那些是高风险的TIA？

- 已服用抗血小板藥, TIA 仍重覆发生
- 从心脏来的栓塞
- 症状愈渐增大
- Johnston's ABCD2 score ≥ 6



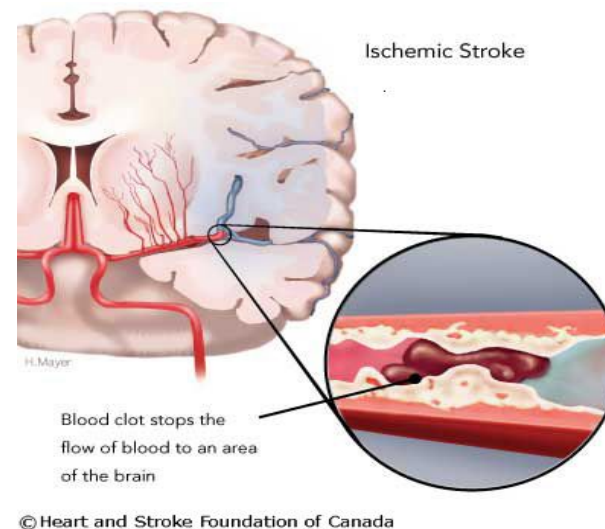
那些是高风险的TIA？

Modified ABCD2 score better prediction ?

- **ABCD2I = ABCD2+ infarct in CT brain** (M Giles. *Stroke*. 2010;41:1907-1913)
- **ABCD2+ MRI** (S Coutts. *International J of Stroke* 2008;3:3-10)
- **ABCD2L2 :** A 9-point score tailored for Chinese patients, as ICAS is a common cause of stroke in Chinese patients, CT scan of brain (**L**esion in CT brain) and TCD(**L**arge artery atherosclerosis). In the *long-term* risk of stroke and death. A score of 8 or above predicts a 5 fold increased risk of stroke.
- It facilitates the selection of patients who require emergency assessment and appropriate treatment **KS Wong**香港中文大学新闻稿2009)

那些是高风险的TIA？

- **Lp-PLA2**是反映动脉粥样硬化斑块不稳定的一个标志,可能可以作为预测**90天**中风和死亡的预后方法。 ◦ A marker of unstable atherosclerotic plaque
(Golledge The symptomatic carotid plaque. *Stroke* 31;774-781)



Brain imaging CT or MRI

- CT has the advantage of being available 24 hours a day and is the gold standard for hemorrhage.

Hemorrhage on MR images can be quite confusing.

CT的优点是可每天24小时。

出血MRI图像上可以相当混乱。

- CT brain : ischemic or haemorrhagic, PVWMD, small vessel disease(penetrating arteries)

Brain Imaging

- CT或MRI 均可, 避免重覆CT+MRI 以减少经费
MRI 较可取 (National Stroke Association Recommendations for Systems of Care for TIA. Johnston. *Ann Neurol* 2011; 69: 872-877)
- 约5-10%的病人不适宜MRI 造影, 例如病人有心脏起搏器, 金属装置等

MRI(DWI)

- MRI(DWI) 能帮助TIA的诊断, DWI +ve 帮助预测早期再中风的机会。

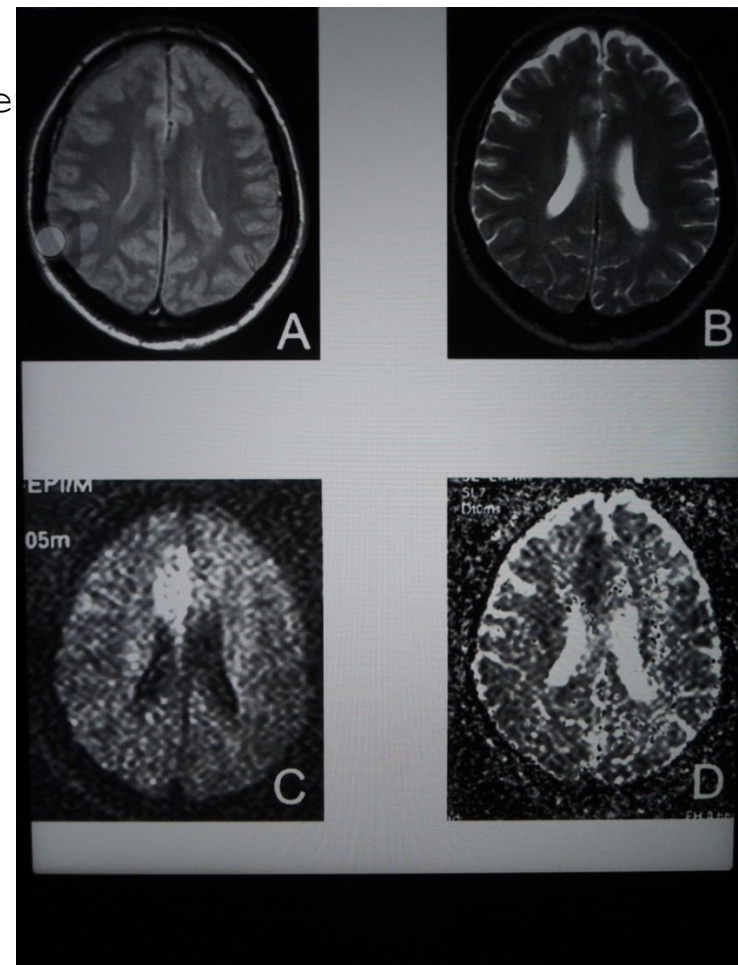
Association Rec (SC Johnston, Ann Ne

- 49.6.% TIA DWI +ve

(Stroke. 2009;40:2229-2232).

- MRI(DWI+PWI)+ve 达50%,
令TIA 及早断症更加准确

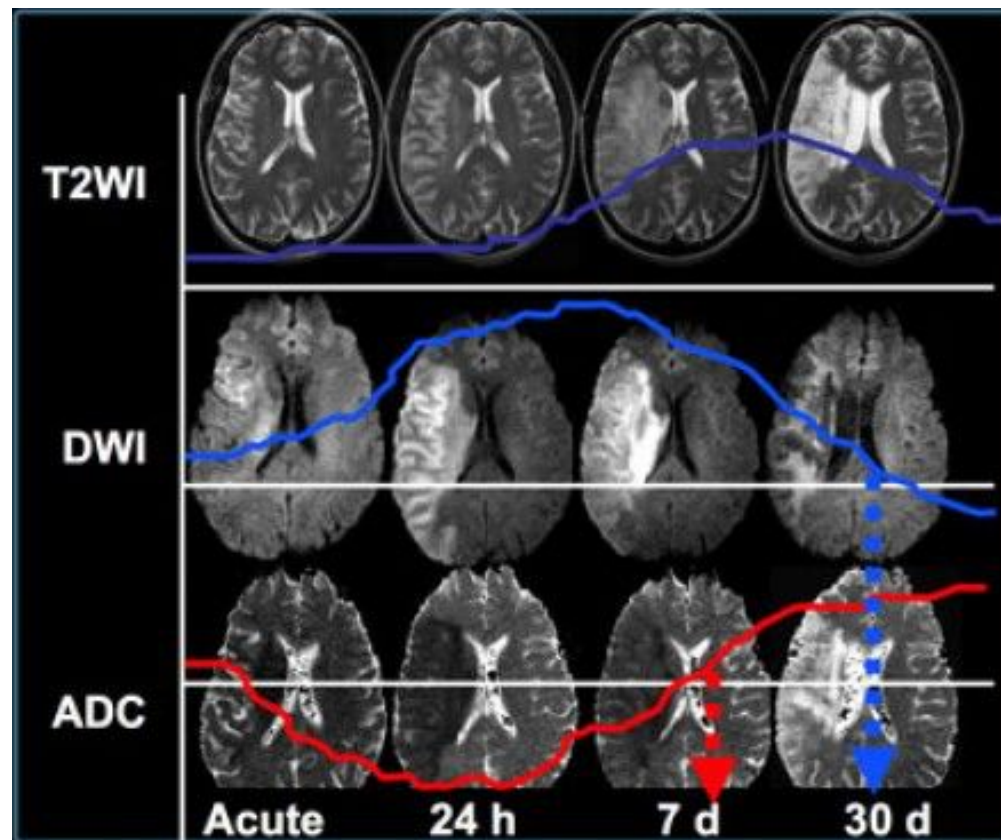
(Neurology 2009; 72:1127-1133)



MRI(DWI) detects infarct early

T2WI and DWI in time

- *Signal intensities on T2WI and DWI in time (courtesy Dr M. Law)*



Brain imaging

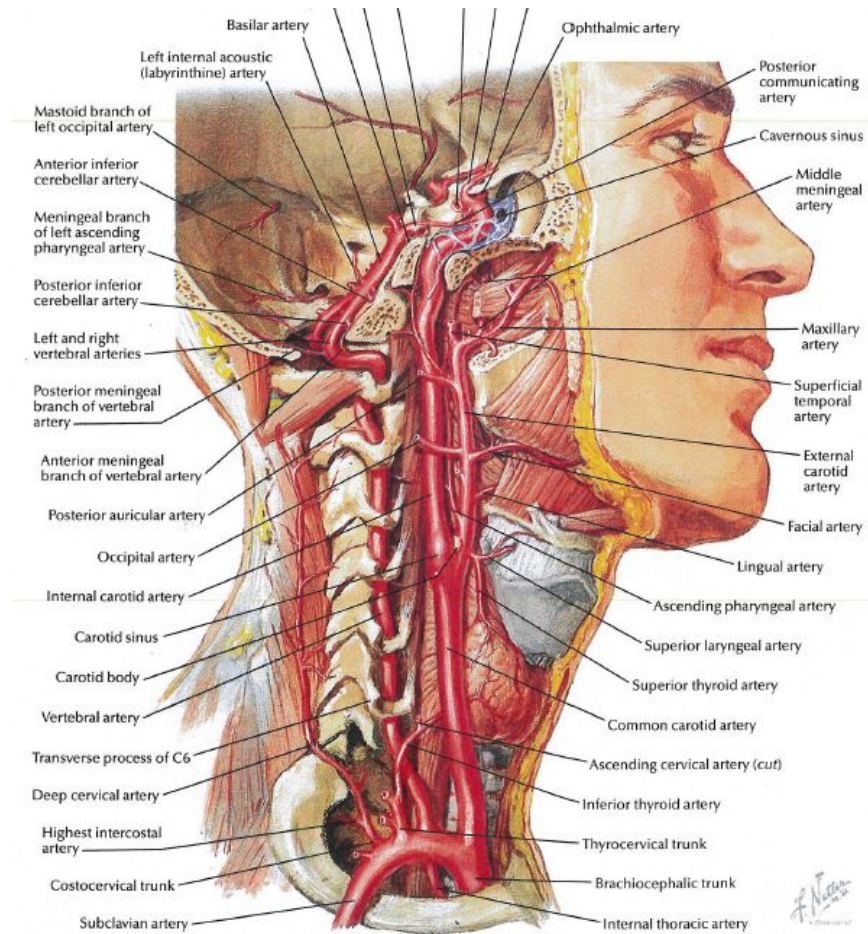
- **MRI disadvantages in ED settings:**
 - 1. far slower than CT scan
 - 2. more expensive than CT scan
 - 3. has logistic difficulties

Vascular Imaging

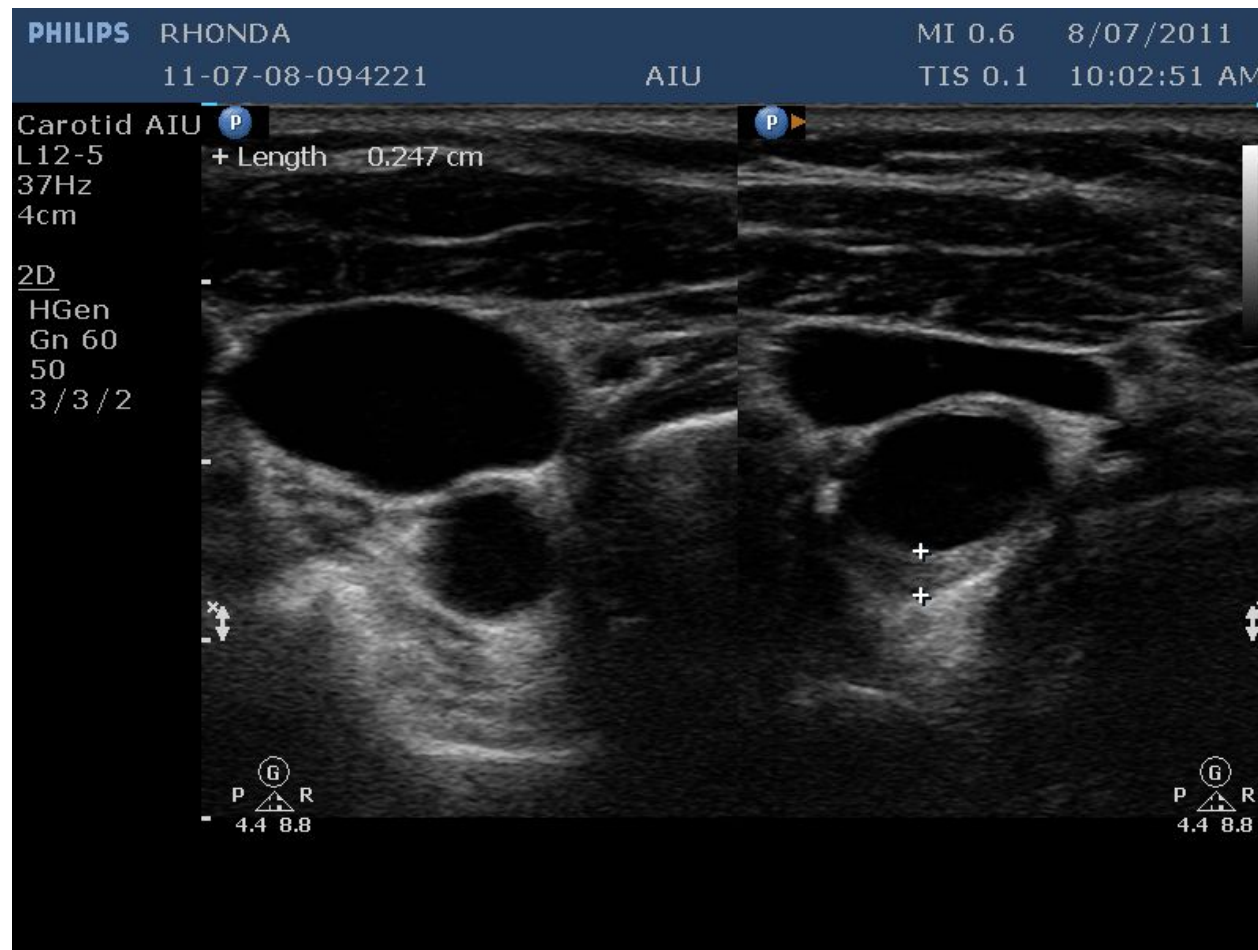
Vascular imaging: preferably within 24 hrs.

- Carotid Doppler 颈动脉多普勒 to look for high grade carotid stenosis.
- Transcranial Doppler 经颅多普勒 TCD for ICAS

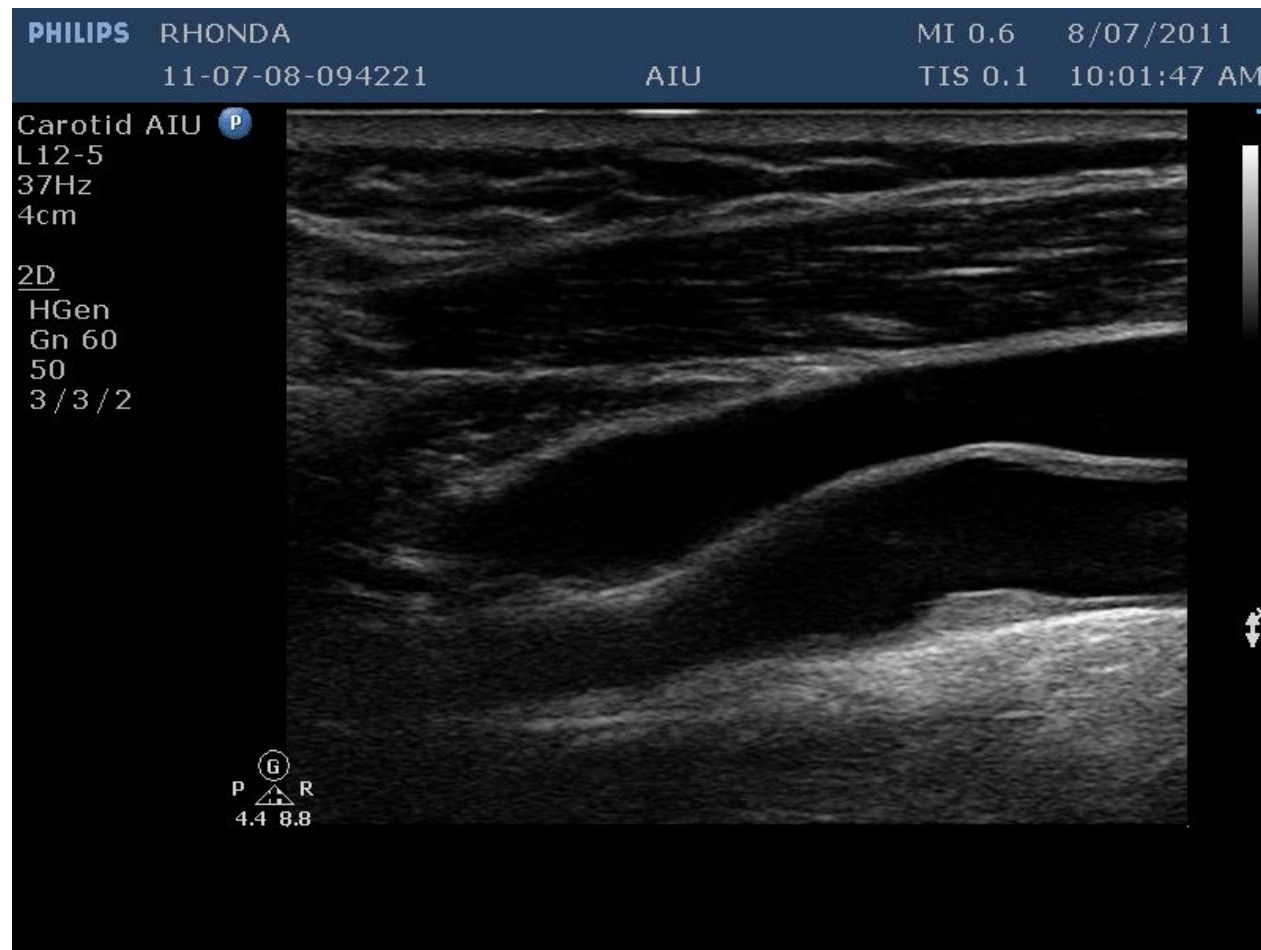
ECAS or ICAS



Carotid Doppler 颈动脉多普勒



Carotid Doppler 颈动脉多普勒



Extracranial arterial stenosis

ECAS

- Carotid stenosis CEA : Rothwell PM Lancet 2003;361:107016
pooled data
- **Endarterectomy for symptomatic carotid stenosis in relation to clinical subgroups and timing of surgery.** Pooled data from European Carotid Surgery Trial and North American Symptomatic Carotid Endarterectomy Trial. Risk of ipsilateral ischemic stroke and death and the overall benefit from surgery were determined in relation to seven predefined and seven post hoc subgroups.
- Patients with stenosis > 50 %, NNT surgery to prevent one ipsilateral stroke in 5 yrs is 9 for men vs 36 for women. Ideally the procedure done < 2 weeks of the patient's last symptoms.

(P M Rothwell *Lancet*;2004; 363:915-24)

- What is the right timing for CEA? Which degree of stenosis benefit from CEA? < 2 weeks or deferred surgery? There is recently some discussion on it

Extracranial arterial stenosis ECAS

外科手术

- 欧洲颈动脉手术试验及北美症状性颈动脉

动脉内膜切除术试验研究：

European Carotid Surgery Trial and
North American Symptomatic Carotid
Endarterectomy Trial studies：

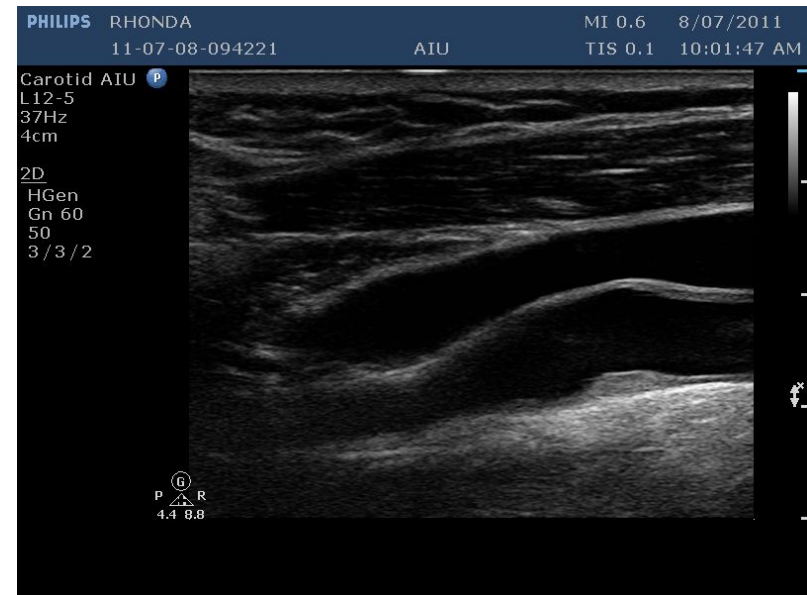
- 手术最有效TIA <2周内进行

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如果 手术延迟 至> 12周，NNT= 125

Surgery is most effective when performed
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surgery delayed >12 week, NNT = 125.

Rothwell PM, Endarterectomy for symptomatic carotid stenosis in
relation to clinical subgroups and timing of surgery.
Lancet .2004; 363:915-24



Further Vascular Imaging

- **Cerebral Angiogram when? :**
- Although some use CT angiography and MRA, the standard evaluation of the anterior circulation is to assess for stenosis of the extracranial ICA with USG **+/_** cerebral angiogram if necessary.
- Outpatient setting further evaluation if can be scheduled promptly.

- For Anterior or posterior circulation
- USG accuracy 80-95%, 89% specificity, 93% sensitivity for high grade stenosis using cerebral angiography as criterion standard.
- Evaluation of posterior circulation to assess for stenosis of the VA and BA by TCD
- non invasive
- sensitivity 75% for detecting significant stenosis
- 1. no acoustic window in 5-10% of patients
- low spatial resolution
- operator dependent
- 1. Some use MRA to evaluate anterior and posterior circulation (show pictures) : there is an increasing use with increasing improvement in the modality.
- Advantages : no need contrast dye and arterial puncture.
- Disadvantages : cost, inability to distinguish high-grade stenosis from complex occlusion, inability to detect intima irregularities, overestimation of stenosis, the evaluation of intracranial vessels limited
- If negative finding in anterior and posterior Ix, echocardiography recommended.

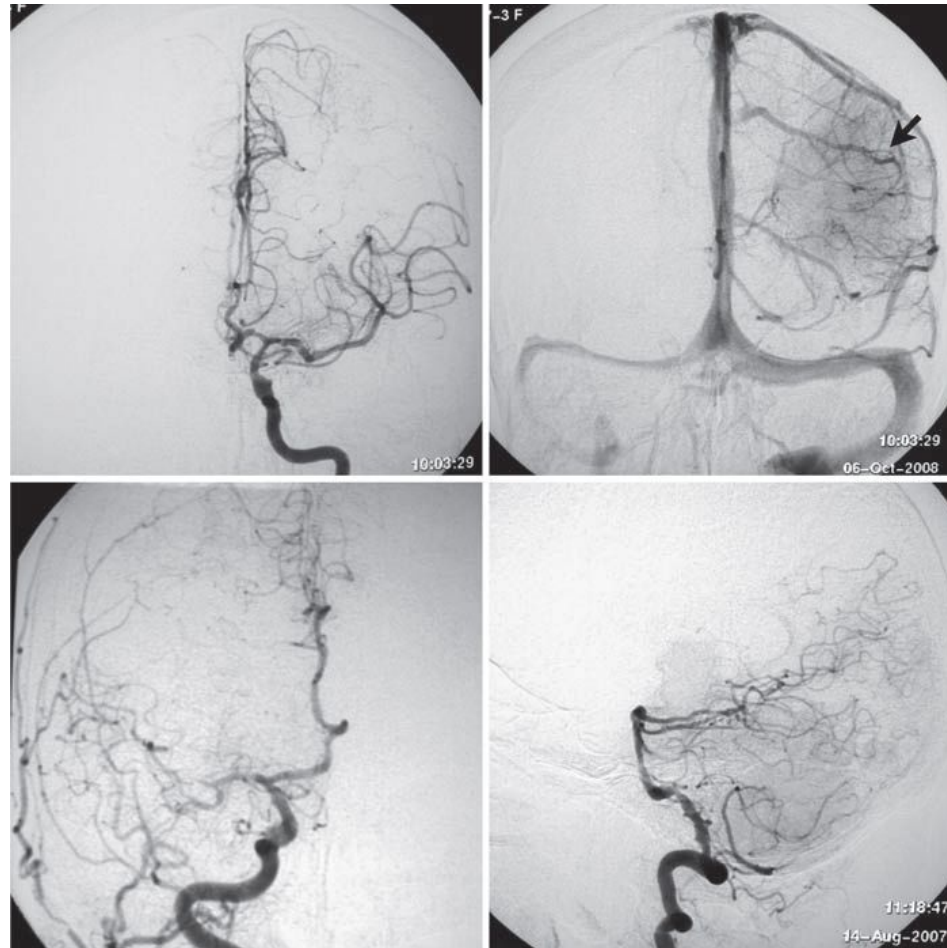
经颅多普勒Transcranial Doppler TCD

- 前循环 (anterior circulation, mainly through the internal carotid and its branches: the ophthalmic and the ACA and MCA)
- 後循环 (posterior circulation, mainly through the vertebral artery and basilar artery)
- 精度80-95%，特异性为89%，93%的灵敏度高度狭窄（以 血管造影为标准） accuracy 80-95%, 89% specificity, 93% sensitivity for high grade stenosis using cerebral angiography as criterion standard
- 評估後循环VA and BA (Evaluation of posterior circulation to assess for stenosis of the VA and BA by TCD)
 1. 非侵入性 non invasive
 2. 检测显著狭窄灵敏度75% sensitivity 75% for detecting significant stenosis
 3. no acoustic window in 5-10% of patients
 4. 空间分辨率低low spatial resolution
 5. 与检测员技术有关operator dependent

ICAS stent :Wingspan stent

- 余教授 Simon CH Yu (中文大学 Interventional Radiologist) (*fms*hk Aug 2013) (*HKMJ* 2013;19:69-73):
- 颅外/颅内颈动脉搭桥已EC/IC bypass证实不能减少中风机会。
- 只要小心选择合适病人, 仍可选用Wingspan 支架:
- 颅内动脉狭窄 ICAS $\geq 70\%$
- 重覆TIA 或轻度中风颅内动脉狭窄
- 药物治疗无効
- 部功能仍可抢救
- DSA证实狭窄部位跟中风部位相符。

ICAS with collateral circulation



-
- **ICAS**
- **SAMMPRIS Clinical Trials** : In patients with intracranial arterial stenosis, aggressive medical management was superior to PTAS with the use of the Wingspan stent system, both because the risk of early stroke after PTAS was high and because the risk of stroke with aggressive medical therapy alone was lower than expected. (M I Chimowitz. NEJM 2011;365:993-1003.)
- **Simon Yu's (a distinguished Neurosurgeon in Hong kong) suggestion : in carefully selected cases.** Angioplasty and stenting with Wingspan should be considered for patients with intracranial stenosis of $\geq 70\%$, presenting with a recurrent ischaemic stroke or TIA, despite medical therapy; with the ischaemic strokes of minor degree and cerebral function that is potentially salvageable, with stenosis confirmed by DSA. Moreover, the stenosis location has to correspond to the vascular territory consistent with the ischaemic event
- Extracranial to intracranial (EC/IC) bypass had been attempted to improve circulation to the brain, it proved ineffective in reducing the stroke rate. (HKFMS Diary Aug 2013)
- Wingspan: appears more superior in stroke risk (look up j korean neurosurgeon)
-

Antiplatelets

- **Low, moderate or high dose Aspirin :** 32, 80, 160, or 320 mg? Loading and maintenance. Low dose aspirin, less hemorrhagic event, esp GIB and total bleeding and stroke (the American Journal of Cardiology vol 95 May 15, 2005)
- **Mono or Dual therapy:** dual with low dose aspirin, more effective in reducing stroke? Systematic Review and Meta-Analysis of Randomized Controlled Trials Geeganage et al. the Acute Antiplatelet Stroke Trialists Collaboration (which journal?)
- Conclusions—Dual antiplatelet therapy appears to be safe and effective in reducing stroke recurrence and combined vascular events in patients with acute ischemic stroke or transient ischemic attack as compared with mono therapy. dual therapy was also associated with a nonsignificant trend to increase major bleeding, dual 15 (0.9%) versus mono 6 (0.4%). These results need to be tested in prospective studies.
-
- CARESS and CLAIR study: dual therapy reduce embolic signal more than aspirin alone and correlates with clinical outcome events.
-

- The final question is whether all these investigations help prediction of stroke or help prevent debilitating strokes?
- Is early or urgent Surgical treatment indicated, and, is it available ?

Conclusion 結論

- The management of TIA patient in ED is institution-specific, 特定機構, 量身定制 depends on the availability 可用性 of resources ie. It varies with the clinical settings 臨床設置, according to availability 可用性 of beds, neurologist, imaging availability (CT or MRI, carotid Doppler TCD), Acute Stroke Unit (ASU), readiness and availability of rtPA, carotid endarterectomy, 頸動脈內膜切除術 fast-track 快車道 TIA clinic etc.
- Inpatient or outpatient immaterial as long as the patient who is in high risk stroke-prone state is quickly recognized and managed urgently.
- Cost of hospitalization and imaging for the patients and the society is an issue.
- Early ED management followed by outpatient management with fast track evaluation is equally safe. Overall incidence of moderate to severe stroke at 2, 7, 90 days 0%, 1%, and 5 %. Outpatients was 0%, 0%, and 4%. (*Ann Emerg Med* 2011;57:510-516)
- Start Aspirin 160 mg till FU by neurologist (Dual therapy recommended by some for less stroke risk with insignificantly more bleeding. But 50% of the Chinese is clopidigrel resistant (homozygous alleles)

PMH AED

- What is PMH AED currently doing? 瑪嘉烈醫院AED目前是怎樣做?
- The protocol arrived is an agreement within and without the department. Not the most ideal management, but relevant to our clinical setting and resource availability. 機構特定, 量身定制 depends on the availability 可用性 of resources ie. It varies with the clinical settings AED and

Management of TIA patients

A&E/EMward

- **Protocol for management of transient ischaemic attacks (TIA) in A&E (Sep 2011)**
-
- **Objective of protocol based TIA service:**
- To provide timely assessment and treatment to TIA patients and facilitate early discharge from A&E with continuing care in the outpatient setting.
-
- **Participating clinical departments**
- A&E
 - Manage TIA in EM ward
 - Arrange cerebrovascular investigations
 - Refer fast track TIA clinic upon discharge: to see patients _ 2 weeks
-
- Neurology team, M&G
 - Support early TCD service for A&E (max 3pt/week). Note: if TCD cannot be done inpatient, get appointment next working day and inform patient TCD appointment date by A&E/EMward nurse.
 - Fast track TIA clinic (Mon am & Thur pm, 1 new quota per session) _ 2 weeks upon patient discharge from EM ward or A&E The Fast track TIA clinic appt should be after TCD appointment date)
-
- X-ray department
 - Support urgent CT service
 - Support early US carotid _ 2 weeks (one urgent US carotid/weekday, no quota on weekends and public holidays)
-

Management of TIA patients

A&E/EMward

- **All TIA patients shall have diagnostic vascular investigations and secondary prevention therapies initiated promptly.**
- Admit EM ward : ABCD2 score ≤ 4 should stay as inpatient for 48h. (counting from A&E registration time).
- ABCD2 score 0-3 or patients presented 7 days after onset can stay less than 48h.
- Investigations :
 - 1. Request urgent brain CT
 - 2. Request inpatient Transcranial Doppler US (TCD).
 - If inpatient appointment not available, change to outpatient.
 - 3. Request early US carotid from X-ray department
 - 4. Check CBC/ESR/L/RFT/INR/fasting glucose/fasting lipid profile, add HbA1C if patient has known DM
 - 5. Perform ECG
-
- Medications
 - 1. Start aspirin 160mg daily
 - 2. Start simvastatin 10mg daily if LDL-C > 2.6 if result available before D/C
-
- Discharge and refer
 - 1. ABCD2 score ≤ 4 can be discharged 48hr from A&E registration time
 - ABCD2 score 0-3 or patients presented 7 days after onset can stay < 48 h.
 - 2. Refer TIA clinic (Mon am & Thu pm) as new case first TIA visit should be after TCD appointment (+/- state the ABCD2 scores in the referral).
- Note :
 - 1. During **weekends or long holidays** where TCD and carotid Doppler appointments could not be confirmed before patient's discharge, EDU and staff of Radiology Department will fax the appointment date to EM ward in the next working day. EM staff will inform patient to come back for TCD or carotid Doppler if patient already discharged.
 - 2. **If patient develops acute stroke during his stay in EM ward, admit to the designated ward area (ASU/Med B) under usual path for acute stroke.**

EM ward management

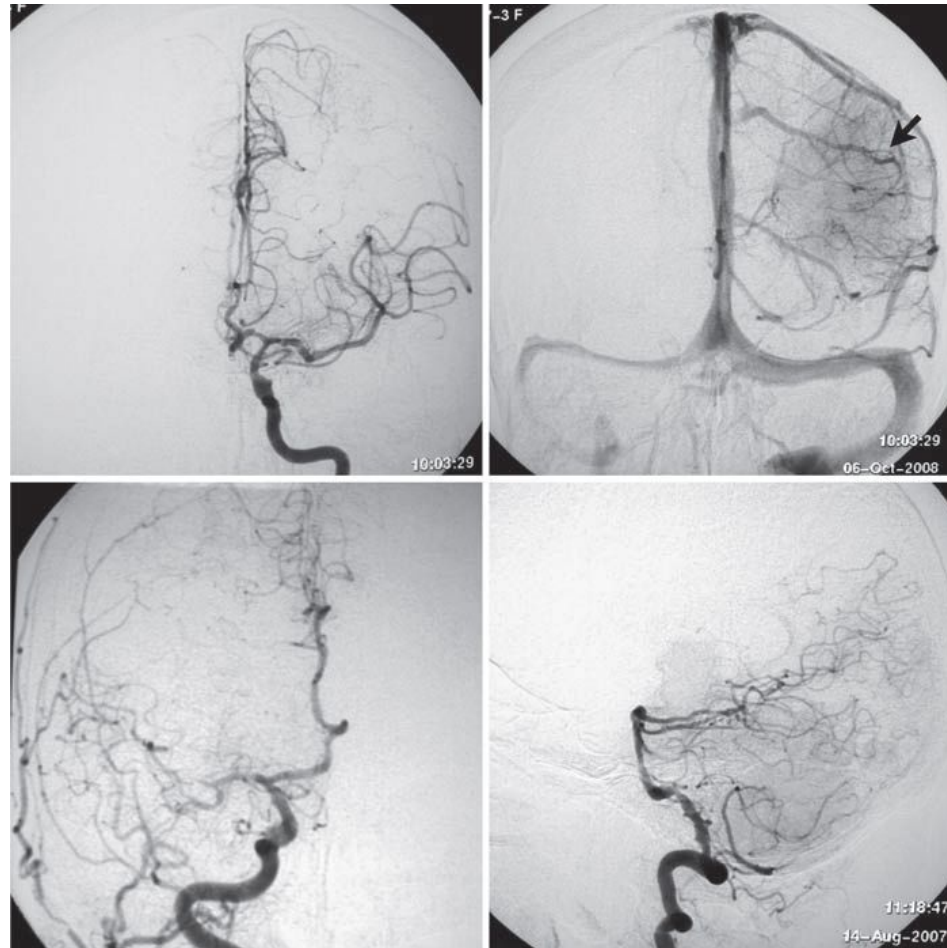
- **Strength**

- Safe discharge in 48 hr from symptom onset.
- Fast track treatment (aspirin, statin, antiHT, DM medications) offered
- Brain and Vascular imaging appointments within days.
- 1. No over or costly investigation such as MRI, MRA, CT angiogram etc.
- Low stroke risk
- Patient safely discharged to the neurologist at TIA clinic within 2 weeks.

- **Weakness**

- 1. May over-treat TIA mimics
- May miss those image negative subjects when CT negative
- No MRI(DWI) offered. DWI can detect infarct at the first hour.

ICAS with collateral circulation



Conclusion and suggestions :

The management of TIA patient in ED is institution-specific, depends on the availability of resources ie. It varies with the clinical settings, according to availability of beds, neurologist, imaging(CT or MRI), Acute Stroke Unit(ASU), readiness and availability of rtPA, carotid endarterectomy, fast-track TIA clinic etc.

Inpatient or outpatient immaterial as long as the patient who is in high risk stroke-prone state is quickly recognized and managed urgently.

The Cost of hospitalization and imaging for the patients and the society is an issue.

Early ED management followed by outpatient management with fast track evaluation is equally safe. Ann Emerg Med 2011;57:510-516 overall incidence of moderate to severe stroke 0%, 1%, and 5 %. Outpatients was 0%, 0%, and 4%. An ED accelerated diagnostic protocol compared with admission equally safe but less costly (Ann Emerg Med 2007;50:109-119)

Start Aspirin 160 mg till FU by neurologist (Dual therapy recommended by some for less stroke risk but insignificantly more bleeding. But 50% of the Chinese is clopidigrel resistant in Chinese (homozygous alleles)

Early ED mx of asymptomatic patient after a TIA:

advantages : fast, safe with low stroke risk. No need hospitalisation.

Disadvantages : might over treat and investigate 50 % of patients. May help if junior ED doctor' diagnosis reviewed by an experienced physician.

結論和建议

1. 住院或不住院，並非最重要。最重是能否盡快察覺風險較高的病人，並提供 部和血管造影 +/- 房顫病人超声心动图echocardiogram
盡快給病人抗血小板aspirin，減少中風機會。雙治療Dual therapy 減少中風，效果可能較佳, 但些微增加出血風險。

結論和建議

2. 住院較昂貴，檢驗可在ED或門診進行。 (Ann Emerg Med 2011;57:510-516 overall incidence of moderate to severe stroke 0%, 1%, and 5 %. Outpatients was 0%, 0%, and 4%.)

先在ED處理然後快速門診跟進，同樣安全。 (Early ED management followed by outpatient management with fast track evaluation is equally safe.)

ED 快速檢查跟住院一樣安全，但費用更低。 (Ann Emerg Med 2007;50:109-119)

結論和建議

3. TIA management institution-specific:

- 急症科TIA 的處理是因各急診科和所屬醫院獨特的情況而定，隨著不同的急症室不同的資源而有所不同。例如急症室和醫院規模的大小，設計，臨床設置clinical setting，**神經內科醫生能否即時提供協助**，Radiology 部門提供各適各樣造影（CT或MRI）的能力，醫院有沒有急性中風病房（ASU）的設置，能否及時提供rtPa，頸動脈手術，快速TIA 診所轉介等，都決定ED怎樣處理TIA病人。
- ED 医生可能過度診斷TIA，一名較有經驗醫生可減少這方面的誤差。

結論和建议

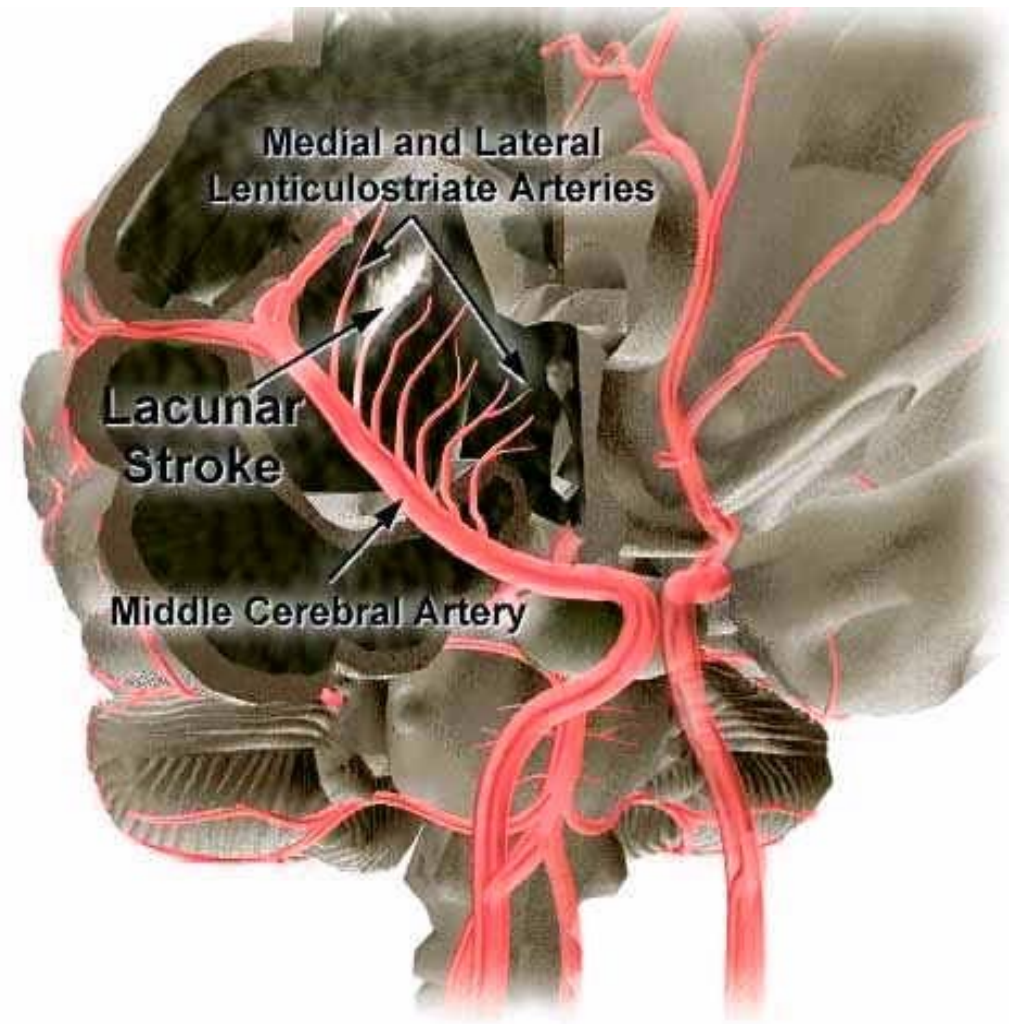
4. 西方人**TIA** 的数据， 可以申延至中国人或亚洲人吗？

- 我们还未有一个前瞻性的TIA预後短期中风风险研究，中风风险率较白种人高还是低？
- 不给aspirin 处方，来作前瞻性研究，今天可能有违医学道德

• Can the Caucasian results be extrapolated to ethnic Chinese?

• No prospective study in stroke risk after TIA. Dilemma : A prospective study withholding treatments to look for stroke to occur after TIA is not ethical.

LAD TIA

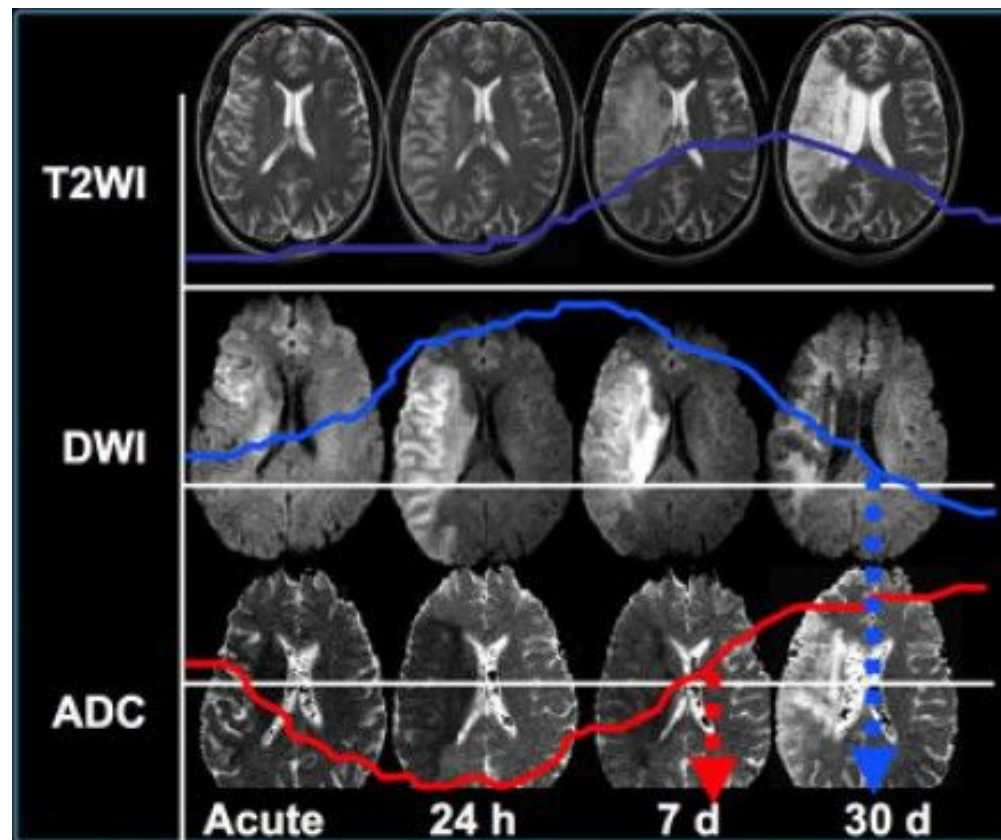


SVD TIA

MRI(DWI) detects infarct early

T2WI and DWI in time

- *Signal intensities on T2WI and DWI in time (courtesy Dr M. Law)*



- Knowledge is emerging fast, regular revision of the protocol is necessary. Resource availability may not catch up with new knowledge.

PMH 112 Cases

- Data Period: Sept. 2011 to Feb. 2013
-
- **TIA Likely after Neurologist OPD: 39 cases**, mostly (90 %) presented with unilateral limb weakness
 - 10 cases (25 %) with CT Brain, TCD and/or Carotid Doppler ALL normal
 - 6 cases (15 %) with Duplex showing stenosis (> 50%)
 - 4 cases (10 %) with TCD showing stenosis
 - 19 cases (49 %) with CT showing lacunar infarcts, old infarcts, cerebral atrophy; Carotid Doppler showing mild atherosclerotic lesions, or TCD suboptimal study
- **Major Stroke : 1 case (within 1 month)**
-
- **TIA Unlikely after Neurologist OPD: 31 cases**, 40 % dizziness/syncope, 40 % limb numbness
 - Doppler showing mild stenosis: 2
 - Doppler showing minimal/mild atherosclerotic changes : 2
 - TCD showing ICA/MCA stenosis : 2
-
- **Others: 42 cases** (CVA, Convulsion, Syncope, DM HypoG, etc.)

PMH TIA PROTOCOL

- PMH TIA的protocol不是最理想的指南。是一份由急診科，放射科和內科的一份可行的共同協議。目的是對不同情度風險的病人在急症科ED先進行適時的評估、檢驗和治療，然後進行及早的轉介。
- 本人認為兩星期的TIA-診所覆診並未理想。人力資源所限，已經是最佳的安排。
- 看到我們一年多以來的結果，可算是一個安全的方案。