ATUDER
Acil Tıp Uzmanları Derneği

Acute stroke care in the ED: experience from Hong Kong

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Conflict of Interest

Colin Graham is the Editor-in-Chief of the European Journal of Emergency Medicine and receives a modest annual honorarium for his editorial work

European Journal of
Emergency Medicine

Audience poll

- How many of you see patients with acute stroke?
- How many of you have access to an acute stroke service (including thrombolysis)?
- How many of you would like to provide this kind of service to your patients?

Objectives

At the end of this session you will:

- Understand why acute stroke care is important in the modern Emergency Department
- Understand the barriers to effective care
- Be aware of methods to improve the care your ED gives for stroke patients

Stroke

- Increasingly common
- Third commonest cause of death
- Affects all ages but mostly the elderly
- Now regarded as “brain attack”
- “Time is brain” – every minute counts
- ‘Therapeutic nihilism’

Why is acute stroke important?

- Increasingly common disease
- Increasingly common cause of death
- Recognition is as important as treatment
- Now treatable – if appropriate prehospital and ED strategies are followed

Why involve the ED in stroke?

- Strengths
  - 24/7/365 potential advocates
  - Experienced with the triage, rapid evaluation, and management of critical patients often using protocols
  - Interfaces with prehospital care
  - Collaborates with subspecialties by definition
  - Willingness to be involved

Importance of ED care for stroke

- If the clinical diagnosis is missed, opportunities for improved care are lost
- Early CT imaging improves outcomes independently of treatment – but this relies on high clinical suspicion by ED staff
- ED can make a difference in stroke

What are the barriers to care?

- Lack of staff and resources
  - Within the ED
  - Neurologists/stroke physicians
  - Acute stroke unit or ward
  - Availability of CT scanning 24 hours/day for the ED
- Other competing pressures
  - Stroke is not a high priority

What are the barriers to care?

- Therapeutic nihilism
  - GPs and prehospital care staff often exhibit this
  - Some emergency physicians and nurses too
  - Even some internal medicine specialists!
- Lack of joined up thinking
  - Lack of triage guidelines
  - Lack of prehospital care
  - Lack of ED acute stroke pathways

Stroke therapies in the ED

- Good basic assessment and resuscitation
- Early identification of stroke and of potential patients for thrombolysis
- Early CT +/- MRI essential for triage
- Accurate timing of symptoms is crucial

Thrombolysis

- Shown to reduce morbidity (NINDS)
- European trials did not reproduce results until the ECASS III trial was positive
- Slow uptake of thrombolysis protocols in the ED for acute stroke
- Around 3%-5% of HK ED population are potentially eligible for thrombolysis

Thrombolysis

- Biggest issue is that therapeutic window is only 3 hours, including imaging
- Greater public awareness of stroke is required and EDs may play a role in educating public
- Decision should be made by neurologists
  - Maybe emergency physicians too!

ASA recommendations

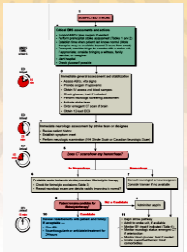
1. Provide rapid access to prehospital care
2. Promote use of algorithms and protocols by prehospital care dispatchers
3. Rapid prehospital response for strokes
4. Ensure involvement of EM and stroke experts in development of stroke education materials, communications and field assessment, treatment, and transport protocols for EMS
5. Patients with stroke signs or symptoms transported to nearest primary stroke center or hospital with equivalent designation
6. A stroke system should ensure that EMS personnel perform and document assessments and screening of candidates for thrombolysis or other hyperacute interventions

(Schwamm, *Stroke* 2005;111:1078-191)

ED stroke evaluation

NINDS Recommendations

- Door-to-Dr: 10 minutes
- Door-to-Stroke Team notification: 15 minutes
- Door-to-CT scan: 25 minutes
- Door-to-Drug: (80% compliance) 60 minutes
- Door-to-Admission: 3 hours



(American Heart Association 2005)
(European Stroke Initiative Executive Committee, *Cerebrovasc Dis* 2003;16:311–337)
(NINDS National Symposium on Acute Stroke, 2003)

ED immediate management

- Check glucose & labs
- Perform neuro exam
- Activate "Stroke Team"
- Confirm onset time
- Two large IVs (CTA)
- Oxygen as needed
- Cardiac monitor
- Continuous SaO_2
- Stat non-contrast CT scan
- Begin general management
- Get "real" rt-PA
- Discuss with patient and family potential treatments
- Prepare for transfer*

An expedited stroke triage pathway: the key to shortening the door-to-needle time in delivery of thrombolysis

TABLE 2. Time management of patients according to thrombolytic therapy received*

	Time (minutes), mean ± standard deviation		
	IV rtPA	IA rtPA	No rtPA
Symptom-to-door	64 ± 42	91 ± 42	181 ± 21
Door-to-stroke team	33 ± 25	33 ± 25	73 ± 20
Door-to-CT brain	30 ± 14	33 ± 14	43 ± 15
Door-to-decision	80 ± 25	51 ± 16	142 ± 17
Door-to-needle	80 ± 25	84 ± 25	-
Onset-to-thrombolysis	144 ± 42	237 ± 42	-

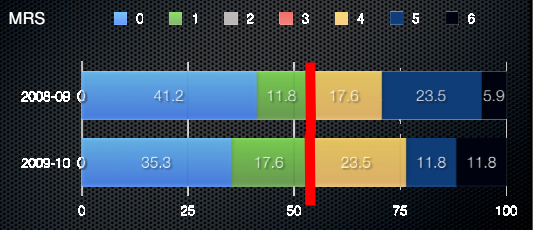
* IV denotes intravenous, rtPA recombinant tissue plasminogen activator, IA inter-arterial, and CT computed tomography

Hong Kong Med J 2010;16:455-62

Outcomes of IV tPA patients

	2008-09 (n=17)	2009-10 (n=17)	total
Favorable outcome (mRS 0-1 at 3 months)	52.9% (9)	52.9% (9)	52.9% (18)
Death (3 months)	5.9% (1)	11.8% (2)	8.8% (3)
Asymptomatic hemorrhage	35% (6)	0% (0)	17.6% (6)

IV tPA outcome: 3-month mRS (favorable outcome mRS 0-1)

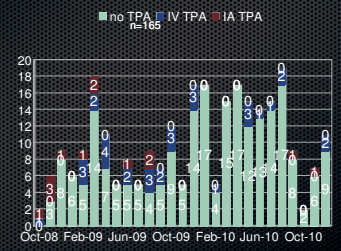


Time performance of IV tPA patients

	NINDS	PWH (2008-2010)	Difference * (Mins)	10.08-3.09	4.09-9.09	9.09-12.10
Door to stroke team	*15*	30	+15	39	31	27
Stroke team to treatment		49		51	43	50
Door to needle	*60*	79	+19	90	74	77

*NINDS time used as benchmark; * time difference from NINDS benchmark*

PWH Thrombolysis Registry (10.08-12.10)



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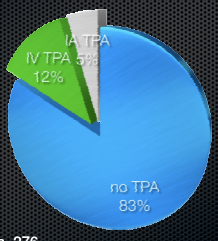

Thrombolysis calls n=276

Summary

- You and your ED can make a big difference in acute stroke care
- Communication, collaboration and an ED stroke champion are the keys to success
- Emergency physicians are experts at systems of care – acute stroke is the perfect example

Questions ?