

# Stroke Thrombolysis at the Horton

---

May 2008

# Overview

---

- Case Study
- Rationale for therapy

# Mr JW

---

- 64 year old maintenance engineer
- 10/03/2008 – woke 0600 felt slightly unwell
- Discomfort left shoulder, mild headache
- Dizzy – lightheaded
- Pottered about between 0600 -0800
- 0800 – more unwell , whilst folding work clothes - fell to left onto sofa
- Left sided weakness/ sensory loss

# Mr JW

---

- Unable to move L side – arm/ leg
- Numbness L arm

# Mr JW

---

- PMHx - ↑BP, ↑Chol, TIA 4 yrs ago, T2DM
- DHx – Aspirin, Simvastatin, Tamsulosin, Insulin

# Mr JW

---

- Alert , BP 125/71, P 50SR, BM 11.7
- HS normal, chest clear
- Cranials – intact except weak left VII
- °VFD
- Flaccid paresis left arm & leg
- Brisk reflexes left side, plantar equivocal
- N range movement left shoulder/ ° swelling
- NIHSS score: 10

# Mr JW

---

- Clear time line
- Clear neurological deficit
- Neuroimaging excluded haemorrhage - hence, proceed to:
- Thrombolysis – 70mg tPA over 1 hr

# Mr JW

---

- Within 20 mins of thrombolysis – power in L arm/ leg returning – 4/5
- Moving toes of L foot
- Gums bleeding
- Insulin sliding scale started

# Day 1 Post Thrombolysis

---

- R lacunar infarct
- Full recovery power/ sensation L arm/ leg
- BM 5.5
- Stop Sliding Scale Insulin

# Current Status of JW

---

- Review in clinic
- Mobile , independent
- Seeking employment

# Management of Hyperacute Ischaemic Stroke

---

- Recognition by family, friends, primary care practitioners , paramedics
- Appropriate education improves diagnostic accuracy to 80% - also improves dispatch to hospital times
- In ED - Check Glucose, ECG, FBC, non-contrast CT Head

# Management of Hyperacute Ischaemic Stroke

---

- Neurological examination is a powerful predictor of prognosis
- NIHSS – most widely used stroke scale
- Ischaemic stroke patients with an NIHSS score of < 10 have a 60-70% chance of a favourable outcome
- Ischaemic stroke patients with score > 20 have only a 4-16% chance of a favourable outcome

# National Institutes of Health Stroke Scale (NIHSS)

---

- 7 functional areas covered: consciousness, cranial nerves, motor function, cerebellar, sensory, language and inattention

NIH STROKE SCALE ITEM	Scoring Definitions	Score
1a. LOC	0-alert and responsive 1-arousable to minor stimulation 2-arousable only to painful stimulation 3-reflex responses or unarousable	
1b. LOC Questions--Ask pt's age and month. Must be exact.	0-Both correct 1-One correct (or dysarthria, intubated, foreign lang) 2-Neither correct	
1c. Commands--open/close eyes, grip and release non-paretic hand, (Other 1-step commands or mimic ok)	0-Both correct (ok if impaired by weakness) 1-One correct 2-Neither correct	
2. Best Gaze--Horizontal EOM by voluntary or Doll's.	0-Normal 1-partial gaze palsy; abnl gaze in 1 or both eyes 2-Forced eye deviation or total paresis which cannot be overcome by Doll's.	
3. Visual Field--Use visual threat if nec. If monocular, score field of good eye.	0-No visual loss 1-Partial hemianopia, quadrantanopia, extinction 2-Complete hemianopia 3-Bilateral hemianopia or blindness	
4. Facial Palsy--If stuporous, check symmetry of grimace to pain.	0-Normal 1-minor paralysis, flat NLF, asymm smile 2-partial paralysis (lower face-UMN) 3-complete paralysis (upper & lower face)	
5. Motor Arm--arms outstretched 90 deg (sitting) or 45 deg (supine) for 10 secs. Encourage best effort. Circle paretic arm in score box	0-No drift x 10 secs 1-Drift but doesn't hit bed 2-Some antigravity effort, but can't sustain 3-No antigravity effort, but even minimal mvt counts 4-No movement at all X-unable to assess due to amputation, fusion, fx, etc.	L or R
6. Motor Leg--raise leg to 30 deg supine x 5 secs.	0-No drift x 5 secs 1-Drift but doesn't hit bed 2-Some antigravity effort, but can't sustain 3-No antigravity effort, but even minimal mvt counts 4-No movement at all X-unable to assess due to amputation, fusion, fx, etc.	L or R
7. Limb Ataxia--check finger-nose-finger ; heel-shin; and score only if out of proportion to paralysis	0-No ataxia (or aphasic, hemiplegic) 1-ataxia in upper or lower extremity 2- ataxia in upper AND lower extremity X-unable to assess due to amputation, fusion, fx, etc.	L or R
8. Sensory--Use safety pin. Check grimace or withdrawal if stuporous. Score only stroke-related losses.	0-Normal 1-mild-mod unilateral loss but pt aware of touch (or aphasic, confused) 2-Total loss, pt unaware of touch. Coma, bilateral loss	
9. Best Language--Describe cookie jar picture, name objects, read sentences. May use repeating, writing, stereognosis	0-Normal 1-mild-mod aphasia; (diff but partly comprehensible) 2-severe aphasia; (almost no info exchanged) 3-mute, global aphasia, coma. No 1 step commands	
10. Dysarthria--read list of words	0-Normal 1-mild-mod; slurred but intelligible 2-severe; unintelligible or mute X-intubation or mech barrier	
11. Extinction/Neglect-- simultaneously touch patient on both hands, show fingers in both vis fields, ask about deficit, left hand.	0-Normal, none detected. (vis loss alone) 1-Neglects or extinguishes to double simult stimulation in any modality (vis, aud, sens, spatial, body parts) 2-profound neglect in more than one modality	

# Stroke Thrombolysis- Rationale

---

- Restoration of blood flow
- Reperfuse the ischaemic brain
- May lessen volume of brain damaged
- May reduce cerebral oedema developing
- May result in better clinical outcome

# Stroke Thrombolysis

---

- Use of thrombolysis proven safe and effective in the NINDS study of tPA for acute stroke, 1995
- Therapy approved by FDA in 1996
- Therapy endorsed by AHA, AAN, Stroke Association in 1997
- European approval 2002

# Stroke Thrombolysis

---

- 2 large RCT ( NINDS 1&2) evaluated the use of tPA within 3hr of stroke onset
- Data showed patients treated with tpa- at least 30% more likely to have no or minimum deficits at 90 days compared to those who receive placebo
- Rate of symptomatic haemorrhage within 36hrs – 6.4%
- No significant difference in 90 day mortality between treated and placebo group

# Stroke Thrombolysis

---

- Further studies have supported these findings
- Number of patients needed-to-treat to identify clinical benefit – only 3
- Concerns over applicability of data to individuals in clinical practice
- Particularly considering short time frame for treatment and potential risks of intracerebral haemorrhage

# Criteria for Thrombolysis with tPA

---

## Inclusion:

- 1) ischaemic stroke with clearly defined time of onset
- 2) measurable neurological deficit
- 3) neuroimaging excluding haemorrhage

## Exclusion:

- Stroke or serious head injury within 3/12
- Major surgery within 14 days
- History of intracranial haemorrhage
- Systolic BP > 185 mmHg or diastolic BP > 110 mmHg
- Symptoms suggestive of SAH
- GI Bleed or haematuria within 7 days
- Seizure at stroke onset

# SITS-MOST *Lancet 2007,359;9558:275-282*

---

- Aim : to assess safety and effectiveness of i.v thrombolysis within the first 3 hrs of onset of ischaemic stroke
- 6483 patients, 285 centres , 14 countries in Europe – prospective, open ,monitored, observational study
- Median age 68;median NIHSS Score: 12
- Primary outcomes: symptomatic intracerebral haemorrhage within 24 hrs and mortality at 90 days
- Data confirmed safety and effectiveness of tPA in routine clinical use, even in centres with little previous experience of thrombolytic therapy for acute stroke

# Who should be sent in for thrombolysis?

---

- Patients that have developed symptoms within 3hrs
- Evidence of focal neurological deficit - patients with mild signs should not be excluded