First Year of 24/7 ASU and Stroke Thrombolytic Service


Division of Neurology, Department of Medicine, Queen Mary Hospital.
IV Thrombolysis in Acute Stroke

1995 NINDS
2008 ECASS 3
STARS, SITS-MOST, SITS-ISTR …

Utilization rates:
- Germany 8.4 %
- Canada 8.2 %
- USA 5.2 %
- China 1.6 %
IV Thrombolysis in Acute Stroke

- Improves patient outcome
- Technically not demanding
- Low utilization rate despite available for over 10 years
- Short therapeutic time-window
- Needs efficient pathway for prioritization of resources
- Not without risk
- Requires close monitoring in designated acute stroke unit (ASU)
IV Thrombolytic Service in QMH

1998  IV-rtPA programme as clinical study
2008  Stroke pathway
      Setting up of ASU (2 beds), routine IV-rtPA during office hours
2010  IV-rtPA protocol supported by off-site HA neurologists through remote access ePR, gradual extension of service hours

From 09-2011, expansion of ASU to 12-beds unit, 24/7 direct A+E admission and IV-rtPA.
A+E
- Triage as Cat 2
- ASU admission criteria
- CT, blood tests

Acute Stroke Unit

ASU nurse
- NIHSS
- Monitoring
- Support MO

Resident
- Ascertain Dx
- rtPA checklist
- Consent

Physician
- CT on ePR
- SICH risk
- Decision on tPA

IV-rtPA or other protocols
1st year of 24/7 IV-rtPA

- Audit data of 24/7 IV-rtPA
- Study period: 09-2011 to 08-2012
- To assess the feasibility of our service model and ASU pathway

- 447 direct admissions from A+E
- 383 (86 %) had discharge diagnosis of stroke or TIA
- Mean age 71 (32 to 98), M : F = 224 : 159
Out of the 383 patients with stroke or TIA
- 276 (72 %) were ischemic stroke
- 119 (43 %) presented within 3 hrs of symptom onset
- Out of these 119 patients, 110 (92 %) had CT performed and arrived at ASU before the 3 hrs time-window expired
- 46 were considered suitable candidate/without contraindication against IV-rtPA according to protocol and after consulting the physician
Results 2

Various reasons for withholding rtPA in the 64 ineligible patients:

- Mild deficits = 28
- Rapid improvement = 5
- Poor premorbid = 4
- Recent stroke = 2
- Hx of ICH/SAH = 2
- On anticoagulants = 5
- Recent surgery = 1
- Uncontrolled BP = 1
- Early ischemic change > 1/3 MCA = 7
- High risk perceived by physician = 3
- Uncertain Dx = 3
- Multiple reasons = 3
For the 46 suitable candidates for IV rtPA, 43 consented to treatment (3 refused)

2 more cases that presented beyond 3 hrs were treated

Total number of cases treated = 45

- 16.3% of all ischemic strokes
- 36.1% of those who presented within 3 hrs
- 86.5% of those without identified contra-indications

Mean age 74 (45 to 98, 40% were post-80)
Results 4

– For the 45 cases treated with IV-rtPA
– Mean timings
  – Onset-to-door = 71 min (0 to 230)
  – Door-to-CT = 29 min (7 to 89)
  – CT-to-ASU = 26 min (3 to 103)
  – ASU-to-needle = 46 min (15 to 95)
  – Door-to-needle = 102 min (54 to 177)

AHA/ASA guidelines 2013
  – Door-to-needle ≤ 60 min (80 % compliance)
Results 5

- For the 45 cases treated with IV-rtPA
  - Median NIHSS pre-treatment = 17
    (NINDS 14, SITS-MOST 12, ECASS 11)
  - 62% were TACI
  - Complications: SICH 2 (4.4%, both fatal), missed wrist fracture 1, tongue hematoma 1
  - Median mRS on discharge = 4
    mRS ≤ 2 (i.e., independent) = 14 (32%)
  - 58% eventually discharged home
Results

- 22 cases (49 %) were managed during office hours and 23 cases (51 %) after office hours
- No significant difference between door-to-needle time, complication rate, mRS (after corrected for NIHSS) and 30-days mortality
Conclusions 1

- The QMH ASU service model and audit data of acute stroke thrombolysis presented.
- A thrifty model 24/7 IV-rtPA programme enabled through reorganization of existing resources and more elbow grease on all those involved, rather than additional resources allocated from central.
- Participation of frontline residents: Acute stroke management is incorporated into the core competency of general medical training.
Conclusions 2

- Our service model facilitated:
  - High diagnostic accuracy (86 %)
  - Rapid assessment for stroke thrombolysis
  - Reliable coverage (92 %), and
  - High utilization rate (16.3 %)
- However, relatively long door-to-needle time (i.e., additional resource, please.)
The End

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