Drug Corner

Acute ischemic stroke : newer medications....our duty to provide and patients right to receive

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A 65 years old male, non diabetic non hypertensive, non alcoholic , smoker presented with acute onset right sided hemiparesis including face on 24th July at 1.30 pm. Patient reported to R.G.Kar Medical college and Hospital emergency at 4.15 pm.

On admission:

- NIHSSS WAS 14
- BP WAS 110/70 mm of Hg
- Pulse 84 /min, regular
- Plantar response : Extensor
- Capillary blood glucose : 104 mg/dl

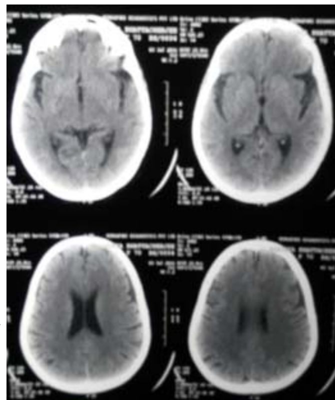
National Institutes of Health Stroke Scale:

- NIHSS is a tool used to objectively quantify the impairment caused by a stroke. The NIHSS is composed of 11 itmes, each of which scores a specific ability between a 0 and a 4. The maximum possible score is 42, with the minimum score being a 0.
- NIHSS 5 to 20 is ideal for thrombolytic therapy. Higher the NIHSS more is the risk of bleeding. However no NIHSS score is an absolute contraindication.

What is the next step in management of the patient?

NCCT Brain

No evidence of Intracerebral haemorrhage



No evidence of Intracerebral haemorrhage

Treatment:

Thrombolysis using intravenous recombinant tissue-type plasminogen activator (rtPA)

- In December of 1995, National Institute of Neurological Disorders and Stroke (NINDS) in United States of America reported *its success in significantly improving the outcome of ischemic stroke by using intravenous recombinant tissue-type plasminogen activator (rtPA), if administered within 3 hours*[1].
- Twenty years down the line, rt-PA is still *the most effective treatment* in ischemic stroke patients.

Patient selection[2]:

Eligibility for IV treatment with rt-PA:

- Age 18 years or older
- Clinical diagnosis of ischemic stroke causing a measurable neurologic deficit
- Time of symptom onset less than 4.5 hours before treatment would begin
- CT consistent with acute infarction/Normal CT

Contraindications and warnings:

Though the list of contraindications is very long but things are not that complicated if we keep few things in our mind—-

- ICH ruled out by NCCT brain
- Evaluate bleeding risk by h/o bleeding from anywhere and drug history (aspirin,heparin,warfarin)
- Recent ACS, CVA
- BP, CBG checked and controlled .

Pre-thrombolysis check list:

- Confirmation of diagnosis of acute stroke
- NIHSS documentation
- Determine definite time of onset
- Neuroimaging to rule out ICH
- Checking inclusion and exclusion criteria
- Consent of thrombolysis to obtained after explaining merits and demerits in detail
- Insertion of 18G I.V. Cannulae into both arms

ALTEPLASE dosage and administration:

- Total dose: 0.9mg/kg. Maximum dose is 90 mg.
- 10% of total dose given as an I.V. push over 2 minutes supervised by a Doctor experienced in stroke thrombolysis.
- Give remaining 90% of dose I.V over 60 minutes by infusion.
- Patients must be continuously monitored prior to and during drug administration and for at least 24 hours following administration.

Pulse, BP, Oxygen saturations, temperature and GCS:

- During rt-PA Every 15 minutes
- Post rt-PA Every 15 minutes for first hour
- Every 30 minutes for 6 hours
- Hourly for 17 hours.

Capillary glucose:

- Admission and 4 hourly if abnormal or diabetic.
- 12 hourly if normal and non diabetic.

ECG:

Continuously for 24 hours

STOP the rt-PA infusion if:

- Anaphylaxis
- BP systolic <100 mmHg
- BP systolic rises to >180/105 mmHg sustained after 5 minutes, or associated with neurological deterioration of any sort
- Major systemic bleeding

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- Neurological deterioration of 2 points on GCS or 4 poimts of NIHSS

Indications for urgent CT scan following thrombolysis in acute ischaemic stroke patients:

- New or worsening severe headache.
- Acute hypertension
- Nausea and vomiting
- Agitation
- Seizure
- Glasgow Coma Score drops by two or more points.
- NIHSS rises by more than 4 points
- New motor signs contralateral to the stroke

With intravenous thrombolysis,about 6% of patients have intracerebral hemorrhage associated with early worsening[3].

Post Stroke Thrombolysis Care:

v DVT prophylaxis –ideally with automated spontaneous compression devices.

v Hydration / Nutrition. Mobilise in first 24 hrs if tolerated.

v Risks and benefits of all invasive procedures should be carefully considered. No urinary catheters for at least 1 hour after infusion ended if possible.

v No aspirin, clopidogrel, dipyridamole or anticoagulant (heparin, warfarin, NOAC's) for 24 hours.

v A non-contrast CT brain should be performed 24-36 hours post thrombolysis for all patients. If no bleeding, Aspirin/Warfarin to be started.

IV thrombolysis is a necessary treatment for ischemic stroke which needs to be taken to rural areas so that the critical time period of 4.5 hours is not missed.

References

1 Tissue plasminogen activator for acute ischemic stroke. TheNational Institute of Neurological Disorders and Stroke rtPAStudy Group. *N Engl J Med* 1995; **333:** 1581-7.

2 [Guideline] Adams HP Jr, del Zoppo G, Alberts MJ, Bhatt DL, Brass L, Furlan A, *et al* — Guidelines for the early management of adults with ischemic stroke: a guideline from the American Heart Association/American Stroke Association Stroke Council, Clinical Cardiology Council, Cardiovascular Radiology and Intervention Council, and the Atherosclerotic Peripheral Vascular Disease and Quality of Care Outcomes in Research Interdisciplinary Working Groups: the American Academy of Neurology affirms the value of this guideline as an educational tool for neurologists. *Stroke* 2007; 38: 1655-711.

3 Hacke W, Donnan G, Fieschi C, Kaste M, von Kummer R, Broderick JP, *et al* —Association of outcome with early stroke treatment: pooled analysis of ATLANTIS, ECASS, and NINDS rt-PA stroke trials. *Lancet* 2004; **363:** 768-74.