THE HYPERACUTE STROKE: ALL THAT ON-CALL NEUROLOGISTS NEED TO KNOW

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OUTLINE

- Acute stroke in the ED & in-house: rapid-fire, real-life diagnosis and management
- A wake-up call: practical guide to managing acute stroke over the phone
- Through the looking glass: pearls and oy-sters of the Telestroke use
- Intravenous thrombolysis: important changes to tPA contraindications
- Stroke mimics and TIAs: critical pathways in risk assessment and management
- Decision-making strategies in patient selection for endovascular therapies: challenges and opportunities

A careful assessment of patients with stroke using neurological examination by the multidisciplinary team of acute stroke care providers is expected to culminate in decision with regard to fibrinolytic treatment within 60 minutes of the patients' arrival to the ED. Designation of an acute stroke team that includes physicians, nurses, and laboratory/radiology personnel is an essential key to success.

Standard approach to stroke severity rating, laboratory diagnosis (using a limited number of hematologic, coagulation, and biochemistry tests (with only the assessment of blood glucose preceding the initiation of intravenous rtPA (IV tPA)) dominates acute stroke care recommendations. Any additional testing (EKG, CXR etc) should not delay thrombolysis.

Brain imaging in the acute setting must not delay thrombolysis. In most instances, non-contrast head CT (NCCT) will provide the necessary information to make decisions about emergency management. Either NCCT or MRI prior to IV rtPA administration must be done to exclude ICH (absolute contraindication) and to determine whether CT hypodensity or MRI hyperintensity of ischemia is visible. Non-invasive angiography will provide a potential insight regarding the additional treatment options (mechanical thrombectomy) potentially available in each individual case. Time to interpretation of the brain imaging study should be expedited (< 45 minutes of patient arrival in the ED by a physician with expertise in reading CT and MRI studies of the brain parenchyma. No additional advanced neuroimaging study should delay IV tPA.

A number of individual eligibility criteria for IV tPA have been reviewed and the scientific rationale for using these criteria in patient selection for IV thrombolysis has been presented in the 2016 statement for healthcare professionals from the AHA/ASA. The criteria to be discussed in the context of clinical practice during the course include:

- Age limitations
- Life expectancy and pre-existing disability
- Stroke severity (mild versus severe)
- Rapid symptom improvement
- Pregnancy and early post-partum, retinopathies, endocarditis
- Unsuspected coagulopathy versus history of anticoagulant use
- Major surgery or trauma within 14 days (including intracranial)
- Acute MI/pericarditis/LV thrombus and potential risks
- Incidental cerebral micorbleeds, aneurysms (<10mm), AVMs, and extra-axial tumors
- Seizure at onset and stroke mimics
- Hypo-/hyperglycemia
- Preceding procedures (including angiography)

One of the most significant recent updates to the practice of acute stroke has been the amassment of Class I, Level A evidence with regard to mechanical thrombectomy approaches in acute strokes due to large vessel occlusions. Data synopsis of the major endovascular stroke trials will be presented and the rationale for developing protocols for patient selection for intra-arterial treatment will be presented in the context of the recent AHA/ASA focused update regarding endovascular treatment:

- All eligible patients should receive IV tPA should receive it, *even if endovascular treatment is considered*
- Recommended selection criteria for mechanical thrombectomy include:
    - Good functional status prestroke (mRS score<2)
    - S/p IV tPA within 4.5hrs
    - Evidence of causative occlusion of the ICA or proximal MCA (M1)
    - Significant neurological deficit (NIHSS score of ≥6)
    - Limited ischemic injury (ASPECTS of ≥6 on CT or small core on MRI)
    - Favorable timeline of intervention (groin puncture within 6 hours of last confirmed symptom onset)

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