Some Difficult Stroke Cases: What Would You Do?

Why Do This Exercise?
- IV TPA is the only “approved” stroke therapy
- Decision to use tPA is often difficult
- Entire clinical picture is taken into account
  - Stroke severity and Baseline status
- Neuroimaging beyond CT without contrast
  - Helpful for decision making re: TPA IV or IA or other interventions
- A team approach may improve patient care, minimize risk, and enhance clinical practice

Case #1 History
- 70 y.o. right-handed male
- No significant past medical history
- No current medications
- Presents with right hemiplegia and global aphasia (mute)
- Symptoms likely present all day

MIDDLE CEREBRAL ARTERY TRUNK OCCLUSION
- Paralysis → Opposite face and arm greater than leg
- Sensory Deficit
- Homonymous Hemianopsia
- Aphasia / Dysarthria (Dominant)
- Agnosia / Neglect / Dysarthria

Computed tomography: acute infarction
Difficult Stroke Cases

Question:
What would you do for this patient?
1. Provide supportive care
2. Provide supportive care

Question:
What is the prognosis for this patient?
1. > 20% mortality
2. > 70% disabled and dependent on others - nursing home care

Case #1 Key Learning Points
• Patients suffering from severe stroke symptoms with large, crucial brain tissue undergoing infarction till complete have poor outcomes.
• Emergency physicians see one severe stroke patient every 3 to 6 months who arrives early enough for the opportunity to salvage ischemic brain

Case #2 History
• 62 y.o. right-handed male
• Negative past medical history
• Presents with right hemiplegia and global aphasia
• Symptoms began definitely <2 hrs ago
• EKG: atrial fibrillation - new

Brain Computed Tomography and CT Angiogram
Hyperdense Middle Cerebral Artery Occlusion (HMCAO) Sign
**Question:**

Would you treat this patient with IV tPA?

1. Yes
2. No

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**Case #2 Key Clinical Question**

Why is IV TPA compelling therapy in this patient?

- Large vessel occlusion is visualized on CT.
- Natural course with supportive care is extremely poor.
- No early infarct signs seen on CT yet.
- Early recanalization before irreversible brain injury increases the likelihood of a good recovery.
- IV TPA effective in recanalizing (opening) HMCAO approximately 30% of time.
- Risk of symptomatic ICH approximately 6%

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**Case #2 Key Learning Points**

- Severe stroke presenting ultra-early provides opportunity to reverse the stroke
- Vessel occlusion definitely present; if not recanalized in minutes to hours, poor outcome or death expected
- Presence of HMCAO sign is NOT contraindication to TPA
- Recanalization with IV TPA in 30% with excellent recovery in 1/3rd of these
  - Number needed to treat = 10

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**Case #3 History**

- 40 y.o. right-handed male
- No significant past medical history
- No current medications
- Presents with left hemiplegia and neglect
- Witnessed onset under 2 hours ago

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**Hyperdense MCA and Acute Infarction**
**Question:**
Would you treat this patient with IV tPA?

1. Yes
2. No

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**Case #3 Key Learning Points**

- CT shows signs of malignant infarction (hypodensity, sulcal effacement in > 1/3 MCA territory)
- Thrombolysis probably not indicated despite presentation within 3 hours from onset (high risk of hemorrhagic transformation)

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**Case #3 History**

- 80 y.o. right-handed male
- History hypertension, diabetes, and mild Alzheimer’s dementia
- Presents with left hand clumsiness and dysarthric speech
- Symptoms began at lunch <1 hr ago
- CT scan: no acute changes; multiple old lacunes and cerebral microvascular dis.

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**LACUNAR INFARCTS**

- Pure Motor Stroke
- Pure Sensory Stroke
- Ataxic Hemiparesis (lower extremity)
- Clumsy Hand Dysarthria

- NO APHASIA and NO NEGLECT

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**Question:**
Would you treat this Clumsy Hand Dysarthria patient with IV tPA?

1. Yes
2. No
Difficult Stroke Cases

Case #3 Discussion

- Lacunar stroke of mild severity
  - Has an excellent recovery over weeks to months with minimal to no residual.
  - 20% - stuttering course and worsen
  - Death rate is nil
- TPA - beneficial in thrombolytic trials
  - Miniscule risk for intracerebral hemorrhage
- Any possible tPA-associated risk averted
  - Especially in elderly, hypertensive, diabetic patients

Case #4 History

- 59 y.o. right-handed female golf “pro”
- Negative past medical history
- Presents with Ataxic Hemiparesis on the right: 1 hrs 20 min from onset
- Baseline CT unremarkable

Question:
Would you treat this Ataxic Hemiparesis patient with IV tPA?

1. Yes
2. No

Case #4 Discussion

- Lacunar syndrome: likelihood of an excellent outcome discussed with patient
- Patient stressed stroke “inconvenience”
- Likely very low tPA ICH risk in this patient
- TPA administered at 2 hours and 15 minutes
- Pt had sudden, complete resolution of symptoms at 3 hours and 30 min from onset

Case #5 History

- 79 y.o. right-handed female
- History of atrial fibrillation, on warfarin for anticoagulation
- Presents with left hemiplegia and neglect 2 hrs 20 min from onset
- Baseline CT unremarkable

Question:
At 2 hours and 50 minutes from symptom onset, the lab still has not processed her INR. How would you treat this patient?

1. IV tPA
2. Intra-arterial thrombolysis if available
3. Supportive treatment only, no thrombolysis
Case #5 Discussion

- International Normalized Ratio (INR) = 2.0
- Prior excellent health
- Family supportive of advanced therapy
- Intervventional team ready for possible Intra-arterial therapy
- 3 hours and 10 minutes - taken to MRI

Case #5 Discussion

- Diffusion-weighted MRI demonstrated very early, mild ischemic changes in MCA territory
- Perfusion MRI showed mismatch with whole MCA territory at risk
- Pt taken to angiography, underwent thrombolysis of MCA clot
- Pt had complete resolution of symptoms following procedure

Key Learning Points

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Questions??

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