Acute Stroke

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Acute Stroke

- Definitions, Epidemiology, Classification, and Etiologies
- Clinical manifestations and Mimics
- Acute Stroke
- Testing
- Medical therapy
- Intervention
- A word about Transient Ischemic Attack
- Post-stroke Follow-up
Definitions

- **Stroke**: The sudden death of brain cells due to lack of oxygen from impaired blood flow
- **TIA**: A transient stroke
  - Most last less than 5 min
  - No deficit, no abnormality on imaging
- **RIND (Reversible Ischemic Neurologic Deficit)** - No longer used
Stroke: Epidemiology

- Ischemic Infarct
- Embolic
- Thrombotic
- Hemorrhagic infarct
- Intracranial
- Subarachnoid
Stroke: Classification

- Ischemic Infarct: Embolic/Thrombotic
  - Large Vessel
  - Small Vessel
- Hemorrhagic Infarct
  - Intracerebral
  - Subarachnoid

http://en.wikipedia.org/wiki/Lacunar_stroke
**Stroke: Classification**

- **L-MCA =** aphasia; R-hemiparesis or sens dist; R-homon hemianopia, L-head/gaze preference
- **R-MCA =** L-hemi neglect, L-hemiparesis or sens dist; L-homon hemianopia, R-head/gaze preference
- **L-PCA =** R-visual field defect; alexia without agraphia; poor color naming; R-hemisens disturbance
- **R-PCA =** L-visual field defect; visual neglect; L-hemisens dist
- **Vertebrobasilar =** Dizzy/vertigo; N/diplopia; quadriplegia; crossed motor-sens findings
- **Penetrating aa (lacunar) =** pure motor (int capsule); pure sens (thalamic); mixed motor/sens (thalamus/int capsule); clumsy hand-dysarthria (basis pontis); ataxic-hemiparesis (ventral pons)
Stroke: Etiology

- Ischemic Stroke
- Embolic
- Thrombotic
- Hemorrhagic Stroke
  - Intracerebral
  - Subarachnoid
Clinical Findings...
and some which are NOT

- Impossible to differentiate between Hemorrhagic/Ischemic in the field
- Suggestions of Hemorrhagic Infarct
- Suggestions of Embolic Infarct
- Suggestions of Thrombotic Infarct
- Findings/Symptoms suggestive of another diagnosis
Stroke Mimics: Differential Diagnosis

- Mass Lesions: Tumor/Abscess/SDH
- Seizure/Postictal State
- Metabolic: Hypoglycemia/Hyperglycemia/Hyponatremia
- Migraine
- Reactivation of prior deficits
- Functional

http://mercyjourney.blogspot.com/2009_02_01_archive.html
Stroke Chameleons

- Always, always consider onset and risk factors
- Movement disorders
- Confusional states/agitation
- Transient global amnesia
- Cortical blindness

http://www.flickr.com/photos/nikographie/745703428/
Acute Stroke: Important Pre-hospital Considerations

- Low-threshold for suspicion is Critical!
- Cincinnati Stroke Scale
- Focused Medical History
- Time of Onset = Time Last seen normal
  - “Dad was fine when we went to bed at 10”
  - “Mom was fine when we left for church 2 hours ago”

http://en.wikipedia.org/wiki/Hourglass
Acute Stroke: Imaging/Testing

- AHA/ASA: Recommendations for Acute Stroke Imaging
- CT vs MRI - with contrast or without
- Carotid ultrasound vs MRA vs CTA vs Traditional Angiogram
- Transcranial Doppler
- Other testing
## Ischemic Stroke: Inclusion/Exclusion for tPA

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
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<tbody>
<tr>
<td>tPA in &lt;3 hours</td>
<td>GI or urinary tract hemorrhage within the last 21 dys</td>
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<tr>
<td>Minor/Rapidly improving symptoms</td>
<td>Arterial puncture at non-compressible site in lat 7 dys</td>
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<td>Seizure at onset of stroke</td>
<td>Receipt of heparin within 48 hours with elevated PTT</td>
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<tr>
<td>Stroke/Head trauma in past 3 months</td>
<td>Relative Contraindications include stroke size estimations</td>
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<td>Major surgery in last 14 dys</td>
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<tr>
<td>Known history of Intracranial hemorrhage</td>
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<tr>
<td>Sustained BP &gt;185/110</td>
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<tr>
<td>Symptoms suggestive of SAH</td>
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<tr>
<td>Serum glucose &lt; 50 mg/dL or &gt; 400 mg/dL</td>
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<tr>
<td>PT &gt; 15 sec</td>
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<tr>
<td>Plt count &lt; 100, 000</td>
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<tr>
<td>tPA 3-4.5 hours - ECASS 3</td>
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<td>Age &gt;80</td>
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<tr>
<td>Use of any anticoagulant, even if subtx</td>
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<td>Hx of prior stroke AND diabetes</td>
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Ischemic Stroke: Medical Therapy

- Thrombolytics
- Anticoagulants
- Antiplatelets
- Other considerations
  - Blood Pressure/Fever/Hypoglycemia/Cardiac Rhythm
  - Statins
- Age matters! - PFO/dissection/hypercoag state
Ischemic Stroke: Intervention

- Intra-arterial thrombolytics
- Angioplasty/Stent placement
- Devices
  - MERCI
  - Penumbra System
- On-going trial: EKOS Ultrasound Device
- Devices not evaluated/Discontinued Studies

Hemorrhagic Stroke: ICH

- Epidemiology/Pathophysiology
- Risk Factors
- Clinical Findings
- Diagnosis
- Treatment
- Prognosis

Hemorrhagic Stroke: SAH

- Epidemiology
- Pathophysiology
- Clinical Findings
- Diagnosis: Imaging/LP
- Complications
- Treatment Considerations

Stroke Complications

- Intracranial
  - Progression of Penumbra to Infarction
  - Hemorrhagic Transformation
  - Edema/Increased ICP
  - Recurrent stroke; Seizure

- Extracranial
  - Aspiration Pneumonia
  - Acute Hypertensive Response
A word about TIA

“The equivalent of unstable angina.”

Why should TIA be treated as a neurologic emergency?

Treatment considerations:

- Addition of/Change in antiplatelet
- Evaluation of Carotid/Vertebral Stenosis
- New-onset/Paroxysmal atrial fibrillation
- Cholesterol Guidelines/BP guidelines
- Other

Your patient’s post-stroke Follow-up

- Secondary Prevention Guidelines
- Antiplatelets/Anticoagulation
- Statins
- Antihypertensives
- Internal Carotid Stenosis
- Lifestyle Intervention
- Therapy

Note: Screen for Depression! (30-40%)
The End - Thank you!
Questions?

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