Unclogging The Pipes

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Disclosures

None
2018 Guidelines for the Early Management of Patients With Acute Ischemic Stroke

Stroke.
2018 Mar;49(3):e46-e110
Objectives

• Delineate the differences between TPA vs thrombectomy
• Discuss antiplatelets options
Stroke Numbers

- 800,000 people experience a new or recurrent stroke
- Every 4 minutes, someone dies of stroke
- 3rd leading cause of death in the U.S
- 2nd leading cause of hospital admission among older adults
- Leading cause of serious, long-term disability

Stroke. 2011;42:849-877
Stroke Death Rates, 2014 - 2016
Adults, Ages 35+, by County

Rates are spatially smoothed to enhance the stability of rates in counties with small populations.

Data Source:
National Vital Statistics System
National Center for Health Statistics
Q1

What percentage of strokes are due to ischemic causes?

A. 95%
B. 88%
C. 50%
D. 30%

Types of Stroke

- Ischemic Stroke: 88%
- Intacerebral hemorrhage: 9%
- Subarachnoid hemorrhage: 3%

A 77-year old male with HTN had an acute onset of dysarthria. In the ED his vitals are stable. He has right gaze preference, mild left lower facial droop, normal muscle tone bilaterally with 3/5 power and pronator drift on his left side. He has decreased sensation to touch over his left face, arm and leg, and left sided neglect. His reflexes are 2/4 in the upper and lower extremities bilaterally. Labs are normal. Imaging studies are shown below. (ASPECTS) score is 8; score > 7 indicates a small core infarct.

Which of the following treatments is most likely to result in the best neurologic outcome?

A. IV t PA
B. Endovascular thrombectomy
C. Four factor prothrombin complex concentrate
D. Early decompressive hemicraniectomy
A. Plain CT head
B. Brain CT angiogram
C. Perfusion Scan

Dead tissue

Penumbra
Updated Management of Ischemic Stroke
Treatment

tPA vs Thrombectomy
“Gold Standard”: tPA

• Narrow time window 4.5 hours
• 2-7% Risk of cerebral hemorrhage and systemic hemorrhage
• Reperfusion in only 13-50% of large vessel occlusions
• Only 8% of patients are eligible
• NIHSS score ≥6

# Contraindications to tPA

<table>
<thead>
<tr>
<th>Absolute</th>
<th>Relative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke of head trauma within 3 months</td>
<td>Major surgery or trauma within 2 weeks</td>
</tr>
<tr>
<td>Anticoagulation, INR&gt;1.7 and prolonged PTT, PT&gt;15 sec</td>
<td>Minor &amp; rapidly improving stroke or seizure</td>
</tr>
<tr>
<td>Hx or current suspicion of intracranial hemorrhage</td>
<td>Hx of GI or GU hemorrhage within 21 days</td>
</tr>
<tr>
<td>SBP&gt;185 or DBP&gt;110</td>
<td>Recent arterial puncture in non-compressible site</td>
</tr>
<tr>
<td>Active internal bleeding</td>
<td>Glucose &gt;400 or &lt;50</td>
</tr>
<tr>
<td>Plts &lt;100 000</td>
<td>Post MI pericarditis</td>
</tr>
<tr>
<td>Heparin within 48hrs with elevated PTT</td>
<td>Recent LP</td>
</tr>
<tr>
<td></td>
<td>Age &gt;80</td>
</tr>
</tbody>
</table>
## Endovascular Treatment Trials

<table>
<thead>
<tr>
<th>Trial</th>
<th>Imaging Required to Confirm Occlusion Prior to Randomization?</th>
<th>Device(s) Used in Intervention Arm</th>
<th>TICI 2b/3 Revascularization Rate in the Intervention Arm</th>
<th>mRS 0-2</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMS III</td>
<td>No</td>
<td>IA Lytic (138), Merci Retriever® (95), EKOS (22), Penumbra (54), Solitaire FR (5)</td>
<td>38% ICA 44% M1 44% M2 23% multi M2</td>
<td>40.8% (N=415)</td>
<td>38.7% (N=214)</td>
</tr>
<tr>
<td>MR RESCUE</td>
<td>No</td>
<td>Merci Retriever®, EKOS, IA Lytic, Penumbra</td>
<td>24% pen (n=34) 27% nonp (n=30)</td>
<td>21% pen (n=34) 17% nonp (n=30)</td>
<td>26% pen (n=34) 10% nonp (n=20)</td>
</tr>
<tr>
<td>MR CLEAN</td>
<td>Yes</td>
<td>97% Stent Retrievers, 2% other Mechanical</td>
<td>58.7% (N=196)</td>
<td>33% (N=233)</td>
<td>19% (N=267)</td>
</tr>
<tr>
<td>ESCAPE</td>
<td>Yes</td>
<td>86% Stent Retriever</td>
<td>72.4% (n=156)</td>
<td>53.0% (n=164)</td>
<td>29.3% (n=147)</td>
</tr>
<tr>
<td>SWIFT PRIME</td>
<td>Yes</td>
<td>100% Stent Retriever</td>
<td>88.0% (n=83)</td>
<td>60.2% (n=98)</td>
<td>35.5% (n=93)</td>
</tr>
<tr>
<td>EXTEND-IA</td>
<td>Yes</td>
<td>100% Stent Retriever</td>
<td>86.2% (n=29)</td>
<td>71% (n=35)</td>
<td>40% (n=35)</td>
</tr>
</tbody>
</table>
Endovascular Treatment Trials

DAWN

- **P**
  - NIHSS≥10
  - 6 to 24 hours
  - Pre-stroke mRS <2
  - Life expectancy ≥6 months
  - Imaging Criteria

- **I**
  - Endovascular thrombectomy

- **C**
  - Medical management

- **O**
  - Functional independence at 90 days

DIFFUSE 3

- **P**
  - 6 to 16 hours

- **O**
Thrombectomy Criteria

General
- Occlusion of ICA or MCA-M1
- ≥ 18 y
- NIHSS ≥ 6
- Good pre-stroke functional status
- Treatment within 6-16 hours of symptoms
- Consider for symptoms within 24 hours

Imaging
- < 1/3 MCA territory involved
- Occlusion of the intracranial ICA and/or MCA-M1
Goal of Ischemic Stroke Treatment

Before

After

Clot
Updated Management of Ischemic Stroke

- Endovascular intervention
- tPA

Treatment

Antiplatelets
A 49-year-old woman is in ED for a 12-hour history of new-onset right-sided visual loss. The patient has DM II treated with metformin.

BP:156/80 mm Hg, HR102/min and irregularly irregular. Cardiac auscultation reveals no carotid bruits or cardiac murmurs. A visual field deficit is present on the right side of both eyes. No weakness or sensory loss. CT head shows a hypodensity in the left occipital lobe, and a carotid Doppler <60% stenosis of both internal carotid arteries and normal vertebral artery flow. EKG shows atrial fibrillation.

Which of the following medications should be administered now?

A. Aspirin
B. Intravenous Heparin
C. Clopidogrel
D. Labetolol
Antiplatelets

- Aspirin within 24 to 48 hours
- After tPA delay for 24 hours
- Aspirin and Clopidogrel for 3 months
Dual Antiplatelet Therapy

CHANCE Trial

- Age ≥ 40 years
- Non-disabling ischemic stroke (NIHSS≤3)
- TIA with moderate-to-high risk of stroke recurrence (ABCD2 score ≥ 4)
- 24 hours of symptoms

- Aspirin + Clopidogrel

- Aspirin alone

- 3-Month risk stroke recurrence
Dual Antiplatelet Therapy
POINT Trial

- ≥18 years
- Non-disabling ischemic stroke (NIHSS ≤ 3)
- TIA with moderate-to-high risk of stroke recurrence (ABCD2 score ≥ 4)
- 12 hours of symptoms

- Aspirin + Clopidogrel

- Aspirin alone

- 3-Month risk stroke recurrence
Updated Management of Ischemic Stroke

- Endovascular intervention
- tPA

Antiplatelets
- Aspirin!
- DAPT 3 months
Conclusion

• Improved neurological outcome with endovascular intervention

• Dual antiplatelet for 3 months only
Thank you
Questions