tPA for Stroke: Weighing the Pros and Cons

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Objectives:
• Describe opportunities EMS has to affect patient care in acute stroke
• Identify potential contraindications to tPA
• Evaluate the current literature (strengths, weaknesses, and historical perspective)
• Review ED tPA form education and consent form
tPA for ischemic stroke
the Pros and Cons

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During a stroke, every second counts. B.E. F.A.S.T.! Call 911 if you see any of the stroke symptoms below:

B - BALANCE.
Is there a sudden loss of balance or coordination?
(To check, ask the person to walk a straight line or touch each finger to their nose.)

E - EYES.
Are there sudden vision changes?
(To check, ask if the person has double vision or cannot see out of one eye.)

F - FACE.
Does one side of the face droop?
(To check, ask the person to smile.)

A - ARM.
Does one arm drift downward?
(To check, ask the person to raise both arms.)

S - SPEECH.
Are the words slurred?
Is speech confused?
(To check, ask the person to repeat a sentence.)

T - TIME THE SYMPTOMS BEGAN.
When was the person last seen looking or acting normally?
Write down the exact time symptoms began. Give this information to paramedics.
What percentage of people, that are having a stroke, call 911 and use EMS?
Recognition and awareness

% AMI & Stroke Patient arriving by EMS

Year

2003 2004 2005 2006 2007 2008 2009

% arriving by EMS

AMI

Stroke

West J Emerg Med. 2014
Why???

- 795,000 people in the US experience new or recurrent strokes each year
- That means that ~400,000 people are coming by POV or not seeking immediate attention
- Efforts to improve 911 use when patients are experiencing stroke have not improved over a six year time period
Who does it the best?

- Nursing home patients are overall the highest user of EMS for time-sensitive situations
- Northeast highest user of EMS
  - Thought to be due to urban setting with established EMS
  - Increased public messaging and education
What are we doing to make change?
Millions Hearts Campaign
- Prevent heart disease and stroke
- 6 year project to prevent 1 million heart attacks and stroke by 2017

Improving access to effective care
- ABCS high risk patients
  - Aspirin
  - Blood pressure control
  - Cholesterol
  - Smoking cessation

CDC

Strategies for EMS

- Stroke patients are dispatched at the highest level of care available in the shortest time possible.
- The time between the receipt of the call and the dispatch of the response team is <90 seconds.
- EMS response time is <8 minutes.
- Dispatch time is <1 minute.
- Turnout time is <1 minute.
- The on-scene time is <15 minutes.
- Travel time is equivalent to trauma or acute myocardial infarction calls.
On Scene

- Manage ABC’s
- $O_2 > 94\%$
- SBP<120mmHg
  - Isotonic saline may improve perfusion
- Hypoglycemia
  - Glucose <60mg/dL
- Establish IV access
- None of which should delay the patient for getting to the ED

Stroke 2013
Gathering important medical information
- Past medical history
  - Seizure
  - Atrial fibrillation
  - Previous stroke
  - Hypertension
- Medications/allergies
- Last seen normal

Numbers of family members
None of which should delay getting the patient to the ED
Get weight once you get to the ED
Situations that mimics stroke

<table>
<thead>
<tr>
<th>Condition</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychogenic</td>
<td>Lack of objective cranial nerve findings, neurological findings in a nonvascular distribution, inconsistent examination</td>
</tr>
<tr>
<td>Seizures</td>
<td>History of seizures, witnessed seizure activity, postictal period</td>
</tr>
<tr>
<td>Hypoglycemia</td>
<td>History of diabetes, low serum glucose, decreased level of consciousness</td>
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<tr>
<td>Migraine with aura (complicated migraine)</td>
<td>History of similar events, preceding aura, headache</td>
</tr>
<tr>
<td>Hypertensive encephalopathy</td>
<td>Headache, delirium, significant hypertension, cortical blindness, cerebral edema, seizure</td>
</tr>
<tr>
<td>Wernicke’s encephalopathy</td>
<td>History of alcohol abuse, ataxia, ophthalmoplegia, confusion</td>
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<tr>
<td>CNS abscess</td>
<td>History of drug abuse, endocarditis, medical device implant with fever</td>
</tr>
<tr>
<td>CNS tumor</td>
<td>Gradual progression of symptoms, other primary malignancy, seizure at onset</td>
</tr>
<tr>
<td>Drug toxicity</td>
<td>Lithium, phenytoin, carbamazepine</td>
</tr>
</tbody>
</table>
Pop Quiz

What are situations that can mimic stroke?
A) Hypoglycemia
B) Brain abscess
C) Seizure
D) Bipolar
E) All of the above
F) A, B, C
What other information is important?

- Warfarin
- Low molecular weight heparins
- Heparin
What other information is important?

- NOAC’s
- Xa inhibitors
- Direct thrombin inhibitors
Pop Quiz

Which of the following are NOAC’s
A) Riveroxaban (Xarelto)
B) Edoxaban (Savaysa)
C) Warfain (Coumadin)
D) Dabigatran (Pradaxa)
E) Dronedarone (Multaq)
F) A,C,D,E
G) A,B,D
Time is brain
Treatment options for ischemic stroke

- tPA
- Thrombectomy
- Intra arterial tPA
<table>
<thead>
<tr>
<th>tPA</th>
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<tbody>
<tr>
<td>NINDS I</td>
</tr>
<tr>
<td>MAST-E</td>
</tr>
<tr>
<td>ECASS II</td>
</tr>
<tr>
<td>IST-3</td>
</tr>
</tbody>
</table>
tPA

- tPA was FDA approved in 1996
  - Based on NINDS I and II
  - ASA/AHA’s recommendation for 0-3 hours
  - 11% chance of living independently at 30 days
  - No difference in mortality at 3 month 17% vs 20%
  - Major bleed 6.4% vs 0.6%
ECASS III
- Not a FDA indication
- Part of ASA/AHA’s recommendation out to 4.5 hour
- 7% increase in favorable outcome
- No difference in mortality outcomes
What do we know so far?
- 12 major randomized trials
- 2 showed benefit
- 6 showed no difference
- 4 showed harm
Need for education

- IHC’s new education and consent forms????
Conclusions

- A need for further education to the public on the signs and symptoms of stroke
- Many aspects where EMS plays a major role in caring for our acute stroke population
- Identify important NOAC’s
- Based on the literature patients have a 1-11% chance of being alive and living independently at 3 months but also have a 6% chance of major bleed
- More literature coming out on some of the other options for treatment