Impact of computed tomography angiography (CTA) imaging after non-contrast CT scan in door-to-needle time in patients that received intravenous tPA in an emergency department

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**Background**

- Stroke is the leading cause of disability in the United States and the fifth leading cause of death
- Timely administration of intravenous tissue plasminogen activator (tPA, alteplase) can reduce long-term disability in patients with an acute ischemic stroke (AIS)
- For every 15 minute reduction in time to tPA administration, 5% fewer patients die from their stroke
- Risk of adverse events increases with delayed tPA administration
- Within 60 minutes of patient arrival to the emergency department (ED) with an AIS, patients should be evaluated and tPA initiated if eligible
- At Duke University Hospital the decision to obtain a CTA immediately after non-contrast CT scan is left up to the neurology and emergency medicine attending physicians

**Objectives**

**Primary Objective**
- To determine if receiving CTA is associated with a delay in tPA administration (door-to-needle time > 60 minutes) compared to non-contrast for patients with an ischemic stroke in the ED

**Secondary Objectives**
- Determine independent, modifiable predictors of delay in tPA initiation:
  - Time to goal blood pressure < 185/110
  - Use of IV anti-hypertensive medications prior to tPA administration
  - Time to first IV line placement
  - Time to second IV line placement
  - Time from completion of CTA to administration of tPA

**Methods**

- IRB-approved, single-center, retrospective observation cohort study
- Subjects will be identified using our stroke registry for patients who presented to Duke University Hospital emergency department between January 1, 2013 to June 30, 2016 with an ischemic stroke in which tPA was administered
- Data will be collected to include demographic and clinical data related to that patient’s age, gender, mode of arrival, NIH stroke scale, vital signs, imaging, and medication administration

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
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<tbody>
<tr>
<td>Tissue plasminogen activator (tPA, alteplase) administration in the ED for ischemic stroke</td>
<td>Age &lt; 18 years</td>
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<tr>
<td>Age ≥ 18 years</td>
<td>Incarcerated patients</td>
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<tr>
<td>tPA administration prior to arrival (transfer patient)</td>
<td>tPA administered in location other than the ED</td>
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**Endpoints**

**Primary Endpoint**
- Door-to-needle time greater than 60 minutes

**Secondary Endpoints**
- Time to goal blood pressure of < 185/110
- Use of IV anti-hypertensive medication given prior to tPA
- Time to first IV line placement
- Time to second IV line placement
- Time from completion of CTA to administration of tPA

**Statistical Analysis**

- Continuous variables will be summarized using mean (SD) or median (IQR) analysis
- Categorical variables will be described using frequencies and percentages
- Associations of categorical variables will be examined using chi-squared tests
- Associations of continuous variables will be assessed using non-parametric Wilcoxon rank sum test or student t-test
- A multivariable logistic regression analysis will be used to compare the odds of delay between CTA imaging and non-contrast CT
- Other covariates include patient arrival method, delayed time from patient)

**References**


**Disclosures:** The authors of this presentation have no disclosures to provide concerning possible financial or personal relationships with commercial entities that may have direct or indirect interest in the subject matter of this presentation.