COMPARISON OF FUNCTIONAL OUTCOMES IN EARLY VERSUS DELAYED ADMINISTRATION OF ALTEPLASE FOR ACUTE ISCHEMIC STROKE IN THE EMERGENCY DEPARTMENT

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PURPOSE
To determine whether alteplase door-to-needle time (<45 minutes vs ≥45 minutes) influences a patient’s functional status at hospital discharge

BACKGROUND
• Stroke is the fifth most common cause of death and a leading cause of disability in the United States
• Alteplase is an effective treatment for Acute Ischemic Stroke (AIS), however its utility is diminished when there is a delay in administration
• Alteplase is a high-risk medication associated with intracranial hemorrhage
• Administration of alteplase within 4.5 hours has shown to correlate with improvement in in-hospital mortality and functional outcomes at hospital discharge
• With this known benefit, there continues to be a need to identify the ideal administration window for optimization of patient outcomes
• A previous study found a significant association between longer door-to-needle times (specifically > 45 minutes) and increased in-hospital mortality and readmission rates
• Currently, the rapid administration of alteplase is the focus of many stroke centers, with a goal of < 45 minutes from hospital arrival
• Even though administration of alteplase within 45 minutes has shown mortality benefit in previous studies, it is unknown whether this earlier administration of alteplase is associated with an improvement in quality of life

METHODS
IRB-approved, single center, retrospective, cohort study

RESULTS (CONT.)

Primary Endpoint:
• Patient functional status at the time of hospital discharge, measured by mRS

Secondary Endpoints:
• Barriers to early administration of alteplase:
  - Unable to obtain medication history
  - Delay in neuroimaging
  - Unclear last known normal (LKN)
  - Delay in obtaining consent
  - Delay in receiving drug from pharmacy
  - Blood pressure (BP) control
• Hospital Course: ICU/hospital length of stay
• Readmission: stroke/cardiac-related event

Safety Endpoints:
• Any intracranial hemorrhage (ICH)
• Symptomatic ICH
• In-hospital mortality rate
• Alteplase administered for stroke mimic

RESULTS
Patient Enrollment

<table>
<thead>
<tr>
<th>Met inclusion criteria (n=143)</th>
<th>Excluded patients (n=37)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Baseline mRS ≥ 2 (n=39)</td>
<td>• Baseline mRS ≤ 2 (n=1)</td>
</tr>
<tr>
<td>• Alteplase received for in-hospital stroke (n=56)</td>
<td>• Alteplase given for other indication (n=4)</td>
</tr>
</tbody>
</table>
| • Incomplete administration (n=1) | • Alteplase administration group, with statistically significant increase of any ICH

Primary Outcome:

<table>
<thead>
<tr>
<th>mRS at discharge:</th>
<th>&lt;2, n(%)</th>
<th>≥2, n(%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;45 min</td>
<td>22 (31.4)</td>
<td>48 (68.6)</td>
<td>0.9920</td>
</tr>
<tr>
<td>≥45 min</td>
<td>23 (31.5)</td>
<td>50 (68.5)</td>
<td></td>
</tr>
</tbody>
</table>

Secondary Outcomes:

<table>
<thead>
<tr>
<th>mRS</th>
<th>&lt;45 min</th>
<th>≥45 min</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2 (1.3)</td>
<td>2 (1.3)</td>
<td>0.7594</td>
</tr>
<tr>
<td>1</td>
<td>3 (2.7)</td>
<td>4 (3.7)</td>
<td>0.3576</td>
</tr>
<tr>
<td>2</td>
<td>5 (7.1)</td>
<td>4 (5.5)</td>
<td>0.7416</td>
</tr>
<tr>
<td>3</td>
<td>6 (8.6)</td>
<td>5 (6.9)</td>
<td>0.3720</td>
</tr>
</tbody>
</table>

Vascular Risk Factors

CONCLUSIONS
• No difference in functional outcome comparing early versus delayed administration of alteplase
• Trend towards increased incidence of symptomatic ICH in early administration group, with statistically significant increase of any ICH
• Obtaining consent and neuroimaging were the biggest contributors for delayed alteplase administration

Limitations
• Retrospective chart review
• Single center study
• Feasibility study

Future Direction
• Continue data collection

REFERENCES