HPI: 77-year-old female with altered mental status, weakness, and difficulty speaking

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Patient Presentation

• **HPI:** 77-year-old female presenting to ED with chief complaint of sudden onset right sided weakness, difficulty speaking, and altered mental status with expressive aphasia.
  • Last known well was one hour prior
  • EMS reported resolution of motor symptoms en route to hospital with only global aphasia still present.
  • NIHSS of 5.

• **PMHx:** T2DM, HTN, HLD, GERD, anxiety, depression, former smoker (30 pack year).
## Pertinent Labs

<table>
<thead>
<tr>
<th>CBC</th>
<th>BMP</th>
<th>Coagulation Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>WBC - 6.3</td>
<td>NA - 137</td>
<td>PT - 12.6</td>
</tr>
<tr>
<td>HB - 8.3</td>
<td>K - 4.0</td>
<td>APTT - 38.9</td>
</tr>
<tr>
<td>HCT - 30</td>
<td>Cl - 100</td>
<td>INR - 1.1</td>
</tr>
<tr>
<td>PLT - 253</td>
<td>CO2 - 28</td>
<td></td>
</tr>
<tr>
<td>BUN - 25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cr - 0.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glucose - 235</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
What Imaging Should We Order?
Select the applicable ACR Appropriateness Criteria

This imaging modality was ordered by the ER physician.
Findings (unlabeled)
Findings:

• Prominence of the ventricle system and extra-axial spaces, consistent with age-appropriate cortical and central atrophy.

• Clear gray/white matter differentiation with visualization of the internal and posterior limbs. No hypoattenuation of the insular ribbon (earliest sign of ischemic stroke).

• PCA occlusion of distal left P2/P3.

Impression:

• Age-appropriate cortical and central atrophy with mild chronic microangiopathic ischemic changes. No acute intracranial process is seen. Distal PCA occlusion of P2/P3 not amenable to thrombectomy.
Clinical Progression:

After imaging the patient remained in the TPA window. ED consulted neurology and agreed on thrombolytic therapy with Tenecteplase.

2 hours later the patient stopped following commands, became agitated, nauseous, and had increased BP. NIHSS increased to 7.

Follow-up Imaging?
Select the applicable ACR Appropriateness Criteria

<table>
<thead>
<tr>
<th>Condition</th>
<th>1-10 mSv</th>
<th>0.3-3 mSv [ped]</th>
<th>Appropriateness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental status change, coagulopathy or anticoagulant</td>
<td>1-10 mSv</td>
<td>0.3-3 mSv [ped]</td>
<td>Usually appropriate</td>
</tr>
<tr>
<td>MRI head without IV contrast</td>
<td>0 mSv</td>
<td>0 mSv [ped]</td>
<td>Usually appropriate</td>
</tr>
<tr>
<td>MRI head without and with IV contrast</td>
<td>0 mSv</td>
<td>0 mSv [ped]</td>
<td>May be appropriate</td>
</tr>
<tr>
<td>CT head without and with IV contrast</td>
<td>1-10 mSv</td>
<td>3-10 mSv [ped]</td>
<td>May be appropriate</td>
</tr>
<tr>
<td>CT head with IV contrast</td>
<td>1-10 mSv</td>
<td>0.3-3 mSv [ped]</td>
<td>Usually not appropriate</td>
</tr>
</tbody>
</table>

This imaging modality was ordered by the ER physician.
Findings (unlabeled)
Findings:

• Intra-axial hyperdensity in the left medial parietal lobe.
• Blood products in the left lateral ventricle.
• Subcentimeter left temporal hematoma (not pictured).

Impression:

• Acute intraparenchymal hemorrhage in the left medial parietal lobe with extension into the left lateral ventricle.
Final Dx:
Distal Left Posterior Circulation Stroke Complicated by Left Medial Parietal Hemorrhage with Intraventricular Extension
Case Discussion - Differential Diagnosis

- Differential Diagnosis for patient presenting with altered mental status, weakness, and difficulty speaking:
  - CVA
  - TIA
  - ICH
  - Hypoglycemia
  - Drug Toxicity
  - Intracranial Mass
  - Infection
  - Head Trauma
Case Discussion- IV Thrombolysis

- IV thrombolysis within 4.5 hours of symptom onset is associated with an increased risk of ICH by 5-7%.

- However, if patient is outside the 4.5 hour window, but meets imaging criteria, intervention may still be beneficial (Wake-Up Stroke Trial) [3].
  - Criteria: unwitnessed stroke onset who had an ischemic parenchymal brain lesion on MRI diffusion-weighted imaging but no corresponding hyperintensity on FLAIR.
  - Statistically significant positive outcomes observed with the intervention group.
Case Discussion- Tenecteplase vs Alteplase

• Tenecteplase often favored over Alteplase for faster door to needle time in ED [5].

• NOR-TEST studies compared Tenecteplase to Alteplase [4].

• NOR-TEST - Tenecteplase 0.4 mg/kg had similar efficacy to Alteplase 0.9mg/kg.
  • Approximately 1100 patients with minor stroke (Avg NIHSS = 4)
  • 3 months post intervention- 5% of patients in both groups had died
  • Serious adverse effects post intervention was 26% in both groups

• NOR-TEST 2 – trial stopped early due to increased number of intracranial hemorrhages in Tenecteplase group [2].
  • Due to early termination, suggest assessing lower dose of Tenecteplase
Patient Course

• Immediately given Tranexamic acid and 10 units of cryoprecipitate to reverse the Tenecteplase and slow the bleeding.
  • Recommended BP goal of < 140/90 (d/t hemorrhagic stroke) with head of bed elevated 30 degrees.
  • Thrombolytics held for 72 hours.
  • CTH repeated every 6 hours to monitor bleed with recommendation for MRI if change in mental status.

• Subsequent MRI confirmed stable hemorrhage and found cortically-based foci of acute/subacute infarcts throughout the right MCA territory suggesting an embolic source.
  • Question of A.fib vs Hypercoagulable state such as cancer.
Patient Course

• Complicated hospital course with patient remaining for a month and a half.

• Developed worsening shortness of breath and cough, with CT chest imaging revealing bilateral lung opacities. Final diagnosis after PET scan, bronchoscopy, and biopsy was early-stage adenocarcinoma of the right lung.

• Currently undergoing radiation for lung cancer.
References:

1. Acute mental status change, delirium, and new onset psychosis [Internet]. [cited 2023Apr27]. Available from: https://acsearch.acr.org/docs/3102409/Narrative/


