AMSER Case of the Month: December 2017

45 male, acute headache + altered mental status

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PATIENT PRESENTATION

• CC: 45 male was transferred from OSH after sxs of Acute HA + AMS w/ SBP readings of >220. Pt has garbled speech and R sided weakness on arrival.

• PMHx: Uncontrolled HTN

• PSHx: none

• FamHx: none significant

• Meds: none

• Soc Hx: none

• Allergies: nkda

• Vitals: BP 142/55 (after cardine drip); P 108; R 20; T 98.4F; SpO2 98%

• Phys Exam: No trauma; garbled speech; AAO x 1 to self only; R hand/feet tremor; other findings wnl
Pertinent Labs

- **Coag:** INR 1.1 (wnl); PTT 20 (slightly low)
- **Glucose:** At admission 197; various POC readings >200
  - No A1C drawn
What Imaging Should We Order?
# ACR Appropriateness Criteria for Severe Headache

**Clinical Condition:** Sudden onset of severe headache ("Worst headache of my life", "thunderclap headache").

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<tr>
<th>Radiologic Procedure</th>
<th>Rating</th>
<th>Comments</th>
<th>RRL*</th>
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<tr>
<td>CT head without IV contrast</td>
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<td>CTA head with IV contrast</td>
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<td>MRA head without and with IV contrast</td>
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<td>Arteriography cervicocerebral</td>
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<td>MRI head without IV contrast</td>
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<td>This procedure may be helpful after CT depending on CT findings. Include FLAIR and GRE or SWI in this procedure.</td>
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<td>MRI head without and with IV contrast</td>
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<td>CT head without and with IV contrast</td>
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<td>CT head with IV contrast</td>
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**Rating Scale:** 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate

*RRelative Radiation Level*
Non Contrast Head CT
Findings:

- **Hematoma** in L thalamic region w/ intraventricular hemorrhage (➔)
- **Edema** appears as low attenuation area surrounding hemorrhage (➔)
- Slight L to R **mass effect** at level of 3rd ventricle (➔)
- Pertinent (-)
  - No hydrocephalus
  - No skull fx
Final Dx:

Spontaneous Hypertensive Intracranial Hemorrhage
Hypertensive ICH is the most common cause of spontaneous ICH in adults. It occurs in branching vessels that form 90 degrees from the parent artery:

- Putamen & Caudate (Lenticulostriate arteries off of M1 segment): 60-65%
- Thalamus (Thalamostriate arteries off of P1 and P2 segments): 15-25%
- Pons and Midbrain (penetrators off basilar a.): 10%

Penetrator vessels develop intimal hyperplasia & hyalinosis, which creates focal areas of necrosis and vessel weakness.

Vessel insults exacerbated by T2DM and glycosylation of vessel walls.

Risk factors: Chronic HTN; M > F; African American
What Should Be Listed on the DDx?

• Drug Abuse
  • Suspect if SBP is acutely elevated prior to ICH

• Cerebral Amyloid Angiopathy
  • Lobar >> Basal ganglionic hemorrhage
  • Elderly >> Middle-aged adults
  • Typically normotensive

• Hemorrhagic Neoplasm (Primary or 2ndary)
  • Elderly >> Middle-aged adults

• Venous Thrombosis
  • Lobar >> basal ganglia
  • Hyperdense dural sinus (may not be present)

• Coagulopathy

• AVM
  • Typically normotensive
  • Children >> Adults
Treatment Guidelines

• Lower SBP to 140 (if initial SBP is >200)
• Target glucose: 140-180 mg/dL
• SCDs for DVT ppx
• NS for maintenance and replacement fluids
• NPO until swallowing fxn is evaluated.
• If GCS <8, Intubate to decrease risk of aspiration
• Reverse coagulopathy, if applicable
References:

• Healthcare Bluebook
  • https://healthcarebluebook.com/page_ProcedureDetails.aspx?cftid=496&g=MRI%20Angiography%20of%20Head%20(with%20and%20without%20contrast)&directsearch=true
  • https://healthcarebluebook.com/page_ProcedureDetails.aspx?cftid=130&g=Brain%20CT%20(no%20contrast)&directsearch=true

• ACR Appropriateness Criteria
  • https://acsearch.acr.org/docs/69482/Narrative/

• UpToDate: Hypertensive Hemorrhage

• StatDx: Hypertensive Intracranial Hemorrhage
  • https://my.statdx.com/document/hypertensive-intracranial-hemorrhage-ede94133-19a8-43b5-a0e3-34046da31f92?searchTerm=Hypertensive%20Intracranial%20Hemorrhage