Acute Ischemic Stroke in the Posterior Circulation

“First Tuesdays” Lecture Series
Introduction and Goal of “First Tuesdays”

• Sabreena Slavin MD – Vascular Neurologist and Neurohospitalist at KU School of Medicine
• Didactic lecture series as part of the Kansas Initiative for Stroke Survival
• Updates in Practice and FAQ’s on Acute Stroke Care
• 20 minute didactic, 10 minutes for questions/discussion.
Posterior Circulation Strokes

- Posterior circulation strokes account for 10-25% of all ischemic strokes.
  - Associated with longer door-to-needle times
  - Plain CT with low sensitivity to detect early posterior circulation strokes, around 16% per one study
- Common symptoms of posterior circulation strokes
  - Dizziness/vertigo
  - Cranial neuropathies including extraocular movement abnormalities and nystagmus, dysphagia, dysarthria
  - Ataxia, including truncal ataxia
  - Mental status abnormalities
  - Nausea/vomiting
  - Can have weakness/sensory deficit but might have bilateral or cross findings (e.g., facial weakness on one side with extremity weakness on the other)
  - Usually will NOT have "cortical signs" such as aphasia or neglect

Dizziness and Vertigo?

• Isolated dizziness/vertigo presentations have even longer delay of diagnosis of stroke.
• Other considerations on differential for vertigo besides stroke:
  – Central processes: vestibular migraine
  – Peripheral processes: vestibular neuronitis/labrynthitis, BPPV, Meniere’s disease.
• More likely to be CENTRAL vertigo: spontaneous, nonpositional, nonepisodic.

HINTS Exam

• Can help distinguish central from peripheral lesions.

• ONLY helpful in patients who have continuous (at least several hours) vertigo and spontaneous nystagmus.
  – Head impulse test
  – Direction changing nystagmus
  – Skew deviation
Head Impulse Test

• Slowly turn head to one direction and then perform rapid horizontal head rotation towards the other direction with patient fixating on your nose.
• Normal = able to fixate on your nose without a corrective saccade.
• Abnormal = patient requires a corrective saccade to fixate on nose.
• Normal impulse test = more likely central process, but can also include migraine and Meniere’s disease
Figure 3  Head impulse test. The patient is asked to maintain gaze on a fixed target, invariably the examiner’s nose. In the first figure, fixation is maintained during the rotation of the head to the left. If there is a right vestibulopathy, turning the head to the left would result in a refixation saccade in order to maintain fixation on the target.
Nystagmus

• Look for direction changing nystagmus on bidirectional lateral gaze for central process.
• Unidirectional nystagmus may be peripheral.
Skew Deviation

• Have patient focus on a target (your finger) while covering and uncovering each eye.

• Abnormal = vertical adjustment of eye when uncovering
• https://www.youtube.com/watch?v=1q-VTKPweuk

HINTS Exam Results

• Any one of these three is concerning for central process:
  – Normal head impulse test
  – Presence of direction changing nystagmus
  – Presence of skew deviation
Evidence for HINTS

• One study with 101 high risk patients (with at least 1 stroke risk factor) found that if a patient had any 1 of these 3: normal head impulse test, direction-changing nystagmus in eccentric gaze, OR skew deviation, this was 100% sensitive (no false negatives) and 96% specific for stroke.

• The HINTS was better than initial MRI, which was falsely negative in 12% of patients.

Basilar artery occlusions

- Often have bilateral symptoms, fluctuating mental status, cranial nerve abnormalities.
- Current LVO scales (FAST-ED, RACE, LA-motor scale, C-STAT) are only designed for anterior circulation large vessel occlusions.
- Early identification is key with CTA head/neck.
- Meta-analysis showed similar incidences of successful recanalization (80%) as anterior circulation strokes. However, has lower occurrence of good outcome (mRS 2 or less) of 42.8% and higher pooled mortality of 29.4%.

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Questions?

• Reminder: Patient with LVO can be taken for endovascular intervention up to 24 hours from last seen normal based on perfusion imaging.
• Reminder: If suspecting basilar LVO, please obtain CTA head/neck (and CTP if able) ASAP.
• Call for help anytime!
• http://www.kissnetwork.us/
• email at sslavin2@kumc.edu