



**KANSAS INITIATIVE FOR
STROKE SURVIVAL**
A PROJECT BY AND FOR KANSANS

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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 (eg. 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/labyrinthitis, 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**

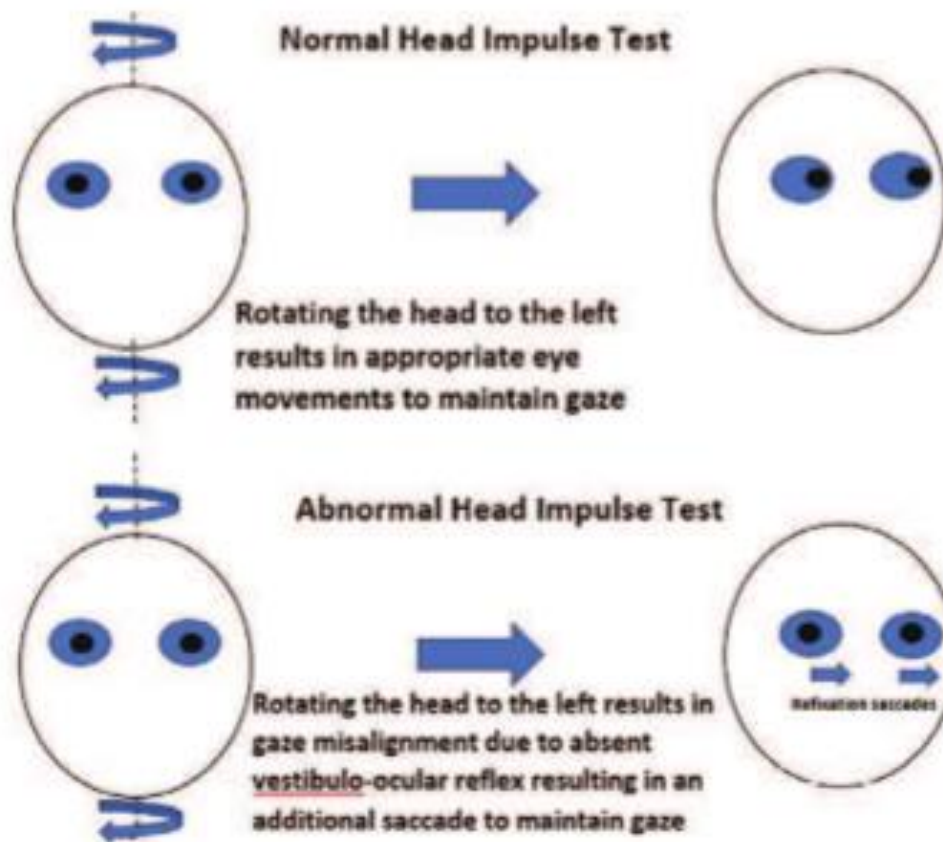


Figure 3 Head impulse test. The patient is asked to maintain gaze on a fixed target, invariably the examiner's nose. In the first figure, fixation is maintained during the rotation of the head to the left. If there is a right vestibulopathy, turning the head to the left would result in a refixation saccade 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>
- Johns, Peter. "The HINTS Exam." *YouTube*. Department of Emergency Medicine, University of Iowa. 12 July 2016. Web. 28 August 2018.

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%.

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