EM Cases Summary

Prepared by Dr. Keerat Grewal, June 2014

Episode 45 – Emergency Medicine Update Conference 2014 Highlights

Dr. Stuart Swadron – An Approach to Vertigo

Peripheral vs. Central Vertigo

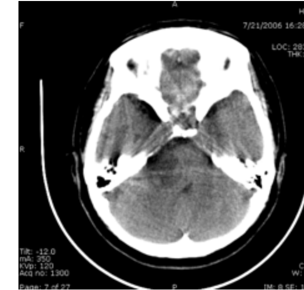
Isolated vertigo is unlikely central in origin. Examine other cranial nerves!

Low miss rate for stroke in patients discharged with Peripheral Vertigo (~1/500 in US), similar emerging results in Canada.

5 D's: Point to central cause for vertigo
- Dizziness
- Diplopia
- Dysarthria
- Dysphagia
- Dysmetria

+don't forget to look for long tract signs in the extremities
+Plantar response
+Important to walk patients in the ED

Imaging in Vertigo: CT may not pick up many abnormalities in the posterior fossa. However, obliteration of the 4th ventricle at the level of the cerebellum indicates edema which is a secondary effect of infarction and may indicate impending herniation



BPPV: episodes (actual sensation of spinning/moving) typically lasts less than 1 minute.

Dix-Hallpike maneuver is considered the Gold Standard test for the diagnosis of BPPV (1). Very helpful if understood and performed correctly; however, if not performed correctly can be misleading, and is often documented as 'positive' in cases of missed posterior circulation stroke.

Consider the test positive when a patient without resting vertigo has vertigo and torsional nystagmus beginning briefly after sudden change in position and then resolves in under 1 minute.

Nystagmus in BPPV has three characteristics:

1) *Latency period* between head down and onset of subjective rotational vertigo and objective nystagmus (latency period can range from 5-20 seconds, rarely up to 1 minute)
2) Nystagmus has *crescendo-decrescendo* pattern
3) Nystagmus typically is *fatiguable*

HINTS Exam: **H**ead **I**mpulse, **N**ystagmus, **T**est of **S**kew.

Presence of any one of these three signs has a sensitivity of 100% and specificity of 96% for stroke! (3)

1) **Head Impulse**: patient stares at examiner's nose, patient's head is quickly rotated from one side to the other. Keep looking at the patient's eye. If there are corrective saccades when turning to the given side, this is a **positive** test and suggestive of a peripheral source for vertigo. A ***negative*** test occurs when there are no corrective saccades and should raise the suspicion of a cerebellar stroke.
2) **Nystagmus:** vertical or bidirectional nystagmus is central in origin.
3) **Test of Skew:** cover/uncover test – vertical misalignment of eyes is suggestive of central causes

Go to https://www.youtube.com/watch?v=6r5UlCVBfx4 to see a video of Scott Weingart explaining how to use an iphone to help interpret the Head Impulse Test for your HINTS exam.

Pitfalls in Differentiating Peripheral vs. Central Vertigo:

- Hearing loss associated with vertigo does ***not*** rule out stroke
- Exacerbation of symptoms with the Dix-Hallpike maneuver can occur in both peripheral and central vertigo

Vertebral Artery Dissection: Consider this diagnosis if the vertiginous patient has a headache, neck pain, or a history of recent head or neck trauma.

Dr. Amal Mattu – Emergency Cardiology

LBBB and Acute MI

Classical Teaching: New LBBB is a STEMI equivalent and requires acute reperfusion (i.e. Cath Lab or thrombolytics).

Most Recent STEMI Guidelines regarding LBBB (5):

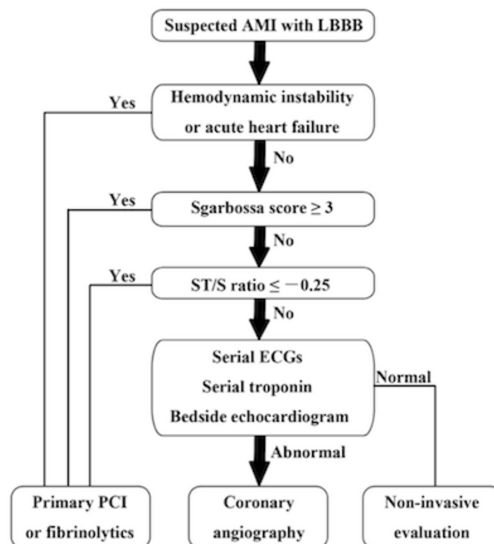
LBBB: Qualifies for acute reperfusion ONLY if patients are:

1) hemodynamically unstable
2) in acute heart failure
3) has concordant ST changes (Sgarbossa Criteria A or B – see below), or
4) ST/S Ratio > 25% (discordant R and S waves > 25% size). Modified Sgarbossa Criteria – has not been externally validated

=> Does ***not*** matter if LBBB is new or old

Sgarbossa Concordance Criteria:

- A: LBBB + ST elevation in same direction as QRS
- B: LBBB + ST depression in same direction as QRS in V1, V2, or V3
- Only required in 1 lead



Diagnosis and triage algorithm for patients with suspected AMI and LBBB.

Fig 1: LBBB Algorithm (Cai et al., 2013) (4)

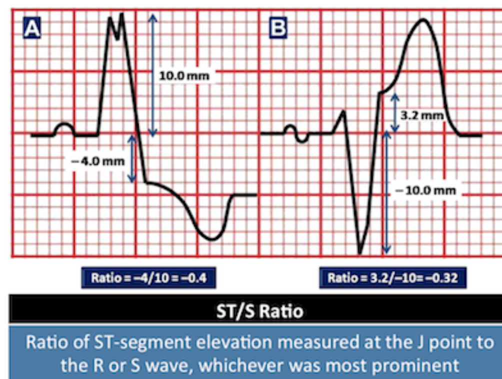


Fig 2: ST/S Ratio (Cai et al., 2014) (4)

Should ST Elevation be the only criteria for STEMI?

ST Elevation Criteria (O'Gara et al., 2013) (5):

- Measure ST elevation at the J-point
- ST elevation > 1 mm in at least 2 contiguous leads, except leads V2/V3:
- STEMI in V2-3:
  - Men > 40yo: ST elevation > 2 mm
  - Men < 40yo: ST elevation > 2.5 mm
  - Women: ST Elevation > 1.5mm

Other ST changes may be present ***before*** ST elevation is evident

Evolution of ST Changes: Clues for impending STEMI

- In complete occlusion of a vessel, reciprocal ST depression often occurs ***prior to*** ST elevation
- Straightening of the ST segment may occur ***prior to*** ST elevation

Important to do serial ECGs to look for evolution of ST changes

The Importance of Serial ECGs

- Have a low threshold to repeat ECG if change in clinical symptoms, persistent pain
- 11% of patients with STEMI had an initial non-diagnostic ECG, with 72% of patients developing a diagnostic ECG within 90 minutes (6).

KEY REFERENCES

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3. HINTS to diagnose stroke in the Acute Vestibular Syndrome: Three-step beside oculomotor examination more sensitive than early MRI diffusion-weighted imaging. Kattah, JC et al. Stroke 2009; 40: 3504-3510. Free Full Text: http://stroke.ahajournals.org/content/40/11/3504.long

4. The left bundle-branch block puzzle in the 2013 ST-elevation myocardial infarction guideline: From falsely declaring emergency to denying reperfusion in a high risk population. Are the Sgarbossa Criteria ready for prime Time? Cai Q et al. American Heart Journal 2013; 166(3): 409-413. Abstract: http://www.ahjonline.com/article/S0002-8703%2813%2900373-6/abstract

5. 2013 ACCF/AHA Guideline for the management of ST-elevation myocardial infarction. O'Gara PT et al. Journal of the American College of Cardiology 2013; 61(4): 78-140. Free Full Text: http://content.onlinejacc.org/article.aspx?articleid=1486115

6. Diagnostic time course, treatment, and in-hospital outcomes for patients with ST-segment elevation myocardial infarction presenting with nondiagnostic initial electrocardiogram. Riley RF et al. American Heart Journal 2013; 165(1): 50-56. Free Full Text: http://www.ahjonline.com/article/S0002-8703%2812%2900737-5/abstract

Quote of the Month:

"Everything should be made as simple as possible, but not simpler" – Albert Einstein