Stroke Update for the Internist

Alexander Grunsfeld, MD
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Disclosure

Nothing to Disclose!
Objectives

1. Evaluation of vertigo – stroke or APV?
2. Management of silent cerebrovascular disease
3. Stroke in women
4. Peri-procedural antithrombosis
5. Post stroke depression
6. Post stroke pain
Evaluation of Acute Vestibular Syndrome
Most Common Causes of Peripheral Vertigo

• Benign Paroxysmal Positional Vertigo
• Meniere’s Disease
• Acute Vestibular Syndrome
  – Labrynthitis
  – Vestibular neuronitis
Red Flags that suggest a CNS Lesion

- Brainstem localizing signs/sxs
- Inability to walk or stand
- Unprovoked vertical nystagmus
- Multi-directional nystagmus
- Total unilateral hearing loss
- HINTS exam
HINTS

• HI - Head Impulse Test
• N – Nystagmus
• TS - Test of skew
HINTS to Diagnose Stroke in the Acute Vestibular Syndrome
Three-Step Bedside Oculomotor Examination More Sensitive Than Early MRI Diffusion-Weighted Imaging

Jorge C. Kattah, MD; Arun V. Talkad, MD; David Z. Wang, DO; Yu-Hsiang Hsieh, PhD, MS; David E. Newman-Toker, MD, PhD

<table>
<thead>
<tr>
<th></th>
<th>Sensitivity (n=69)</th>
<th>Specificity (n=25)</th>
<th>NLR Stroke (95% CI)</th>
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<tbody>
<tr>
<td>General neurological signs*</td>
<td>19%</td>
<td>100%</td>
<td>0.81 (0.72–0.91)</td>
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<tr>
<td>Obvious oculomotor signs</td>
<td>28%</td>
<td>100%</td>
<td>0.72 (0.63–0.84)</td>
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<tr>
<td>Severe truncal ataxia</td>
<td>33%</td>
<td>100%</td>
<td>0.67 (0.56–0.79)</td>
</tr>
<tr>
<td>Any obvious signs</td>
<td>64%†</td>
<td>100%</td>
<td>0.36 (0.27–0.50)</td>
</tr>
<tr>
<td>Initial MRI with DWI</td>
<td>88%†</td>
<td>100%</td>
<td>0.12 (0.06–0.22)</td>
</tr>
<tr>
<td>Dangerous bedside HINTS</td>
<td>100%</td>
<td>96%</td>
<td>0.00 (0.00–0.12)</td>
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CASE

• 72 yom presents with complaints of new and severe headache.

• Hx is positive for progressive BLE numbness but no other neurol sxs.
Central nervous system infarction is defined as brain, spinal cord, or retinal cell death attributable to ischemia, based on neuropathological, neuroimaging, and/or clinical evidence of permanent injury. Central nervous system infarction occurs over a clinical spectrum:

Ischemic stroke specifically refers to central nervous system infarction accompanied by overt symptoms, while silent infarction by definition causes no known symptoms.
Admit immediately for work up?
Work up...

• MRI brain
• Imaging of vasculature of head and neck:
  – MRA
  – CTA
  – Carotids
• TTE if embolic pattern or history of cardiac disease
“Suggestions”

AHA/ASA Scientific Statement

Prevention of Stroke in Patients With Silent Cerebrovascular Disease

- Implement primary prevention
- Not clear if aspirin is warranted in absence of other risk factors
- With risk factors there is an increased risk for stroke and “reasonable to consider this information when making decisions about anticoagulation for atrial fibrillation, revascularization for carotid stenosis, treatment of hypertension and initiation of statin therapy”
How about silent microbleeds?
Silent Microbleeds

- Anticoagulation OK for afib
- Novel oral AC preferred over warfarin
- Percutaneous closure of left atrial appendage could be considered as alternative to AC
- Antiplatelet therapy OK if indicated
- No need to screen for microbleeds before starting antithrombotics
Women and Stroke
ARE THERE ANY DIFFERENCES?
Sex related increased risk for stroke

- Pregnancy
- Preeclampsia
- Gestational diabetes
- OC use
- Postmenopausal hormone use
- Migraine w aura
- A fib
- DM
- HTN
Guidelines for the Prevention of Stroke in Women
A Statement for Healthcare Professionals From the American Heart Association/American Stroke Association

• Women with chronic hypertension or previous pregnancy-related hypertension should take low-dose aspirin from the 12th week of gestation until delivery. 1/A
• Aggressive therapy of stroke risk factors among OC users. 2/C
• Aspirin 81mg/day may be used for primary prophylaxis, especially if risk factors are present. 2/B
<table>
<thead>
<tr>
<th>Population</th>
<th>Recommendation</th>
<th>Grade</th>
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<tbody>
<tr>
<td>Men, Age 45-79</td>
<td>The USPSTF recommends the use of aspirin for men age 45 to 79 years when the potential benefit due to a reduction in myocardial infarctions outweighs the potential harm due to an increase in gastrointestinal hemorrhage. See the Clinical Considerations section for discussion of benefits and harms.</td>
<td>A</td>
</tr>
<tr>
<td>Women, Age 55-79</td>
<td>The USPSTF recommends the use of aspirin for women age 55 to 79 years when the potential benefit of a reduction in ischemic strokes outweighs the potential harm of an increase in gastrointestinal hemorrhage. See the Clinical Considerations section for discussion of benefits and harms.</td>
<td>A</td>
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<tr>
<td>Men and Women, 80 Years and Older</td>
<td>The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of aspirin for cardiovascular disease prevention in men and women 80 years or older. See the Clinical Considerations section for suggestions for practice regarding the I statement.</td>
<td>I</td>
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<tr>
<td>Women Younger than 55 (Stroke), Men Younger than 45 (MI)</td>
<td>The USPSTF recommends against the use of aspirin for stroke prevention in women younger than 55 years and for myocardial infarction prevention in men younger than 45 years.</td>
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Periprocedural Antithrombosis

“To Stop or Not to Stop – that is the question”
<table>
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<tr>
<th>Principle</th>
<th>Risk of stroke outweighs risk from minor bleeding</th>
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<tbody>
<tr>
<td>Moderate evidence</td>
<td>We can’t tell you what that risk actually is</td>
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<tr>
<td>Insufficient evidence</td>
<td>Longer is worse</td>
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<tr>
<td></td>
<td>We don’t know how to do it safely</td>
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It is axiomatic that clinicians managing antithrombotic medications periprocedurally weigh bleeding risks from drug continuation against thromboembolic risks, which to base this decision shows a small increase in morbidity of TE events exceed those associated with bleeding.
Dental Procedures
“Minor” procedures

Transrectal ultrasound guided prostate biopsy
“Minor” procedures
How about bridging?

Strategies

1. Continuous
2. ACG
3. ACG
4. Defere surgery
Post-Stroke Management Issues
AHA/ASA Guideline

Guidelines for Adult Stroke Rehabilitation and Recovery

A Guideline for Healthcare Professionals from the American Heart Association/American Stroke Association

Endorsed by the American Academy of Physical Medicine and Rehabilitation and the American Society of Neurorehabilitation

The American Academy of Neurology affirms the value of this guideline as an educational tool for neurologists and the American Congress of Rehabilitation Medicine affirms the educational value of these guidelines for its members
Post Stroke Depression
Post Stroke Depression

• Occurs in approximately 1/3 stroke survivors
• Associate with poor functional outcomes and high mortality
• Combination of psychosocial and biological factors
• Symptoms most frequently develop in the first year post stroke
Predictors of PSD

• Stroke severity
• Physical disability
• Cognitive impairment
• Depression before stroke
• Social isolation
What to do?

• Screen in first year (CES-D, HDRS, PHQ-9)
• If present treat
  – Pharmacological (fluoxetine or other SSRI)
  – Psychosocial intervention
• No clear benefit form neuromodulation
• Consider methylphenidate
Hemiplegic Shoulder Pain
Hemiplegic Shoulder Pain

- Common after stroke
- Associated with spasticity, subluxation and motor weakness
- Pain results from tissue injury, abnormal joint mechanics and central nociceptive hypersensitivity
- Mechanical and CNS components
- Peripheral and Central neuropathic pain
Prevention

- Range of motion PT
- Proper positioning
- Motor retraining PT
Positioning the Left Hemiplegic Arm

Lying on Hemiplegic Side
- Hemiplegic arm forward at the shoulder; elbow extended and hand supported with the palm up
- Unaffected arm supported forward on the pillow
- Pillow behind back
- Both legs bent at the hips and knees; pillow in between

Lying on Unaffected Side
- Hemiplegic arm supported forward on two pillows
- Pillow behind back
- Both legs bent at the hips and knees, a pillow in between

Sitting in Bed
- Hemiplegic arm supported on two pillows
- Trunk in midline
- Pillows under unaffected arm as required

Sitting in Wheelchair
- Lap tray on wheelchair
- Pillow under hemiplegic arm with shoulder abducted, forearm pointing forward and hand supported
Prevention

- Range of motion PT
- Proper positioning
- Motor retraining PT
Treatment of pain

2nd Line

• Neuromuscular electrical stimulation
• Corticosteroids
• Suprascapular nerve block
• Surgical tenotomy
• Acupuncture
Treatment of pain

1st Line

• Management of spasticity
  – Muscle relaxants
  – Botulinum toxin

• Neuropathic pain medication
  – Gabapentin
  – Pregabalin

• Supportive Devices and slings
Post Stroke Central Pain
Characteristics

- Complicates 7 to 8 percent of strokes
- Symptomatic within 1 month of stroke
- Burning, aching, allodynia
- Diagnosis:
  - Post stroke
  - Corresponds to CNS lesion
  - Cannot be accounted for by peripheral neuropathic or nociceptive pain
Treatment
Pharmacological

• 1\textsuperscript{st} Line
  – Amitriptyline, lamotrigine

• 2\textsuperscript{nd} Line
  – Pregabalin, gabapentin, carbamazepine, phenytoin
Treatment

Non-pharmacological
Stroke. 2014;45:000-000

Stroke. 2009;40:3504-3510

Stroke. 2017;48:e44-e71

Stroke. 2017;48:e30-e43.