Recognition of Stroke and TIA: What every physician should know

Grey & Bruce Counties

November 23, 2016

***Open Access – slides can be used for future education
Why this project?

- Improve outcomes for people in the South West LHIN who have a stroke or TIA (transient ischemic attack).
- Phase I focus on concentrating stroke expertise by realigning inpatient acute and rehabilitative stroke care from 28 hospital sites to 7 Designated Stroke Centres.
- Phase II focus on creating recommendations to enhance care for TIA and stroke survivors after they leave the hospital.
Phase I – Improving inpatient stroke care

Implementing and evaluating recommendations for the future of in-hospital stroke care

People with stroke or TIA achieve the best outcomes when treated:
- in a system with coordinated care
- by practitioners with recognized stroke expertise
- in a facility with a stroke unit serving at least 165 patients with ischemic (caused by a clot) strokes per year.

Realigning from 28 hospitals to 7 Designated Stroke Centres to achieve optimum stroke care by March 31, 2017.

Once realignment complete, those who have a TIA or stroke will go to a Designated Stroke Centre.

South West Stroke Project
South West LHIN

4 Stroke Districts
- Grey/Bruce
- Huron/Perth
- London/Middlesex/Oxford
- Elgin/Oxford/ Norfolk
What Does This Mean for Patients Calling 911 in Grey and Bruce Counties?

<table>
<thead>
<tr>
<th>EMS Transportation</th>
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Recognition of Stroke and TIA: What every physician should know

G. Bryan Young, MD, FRCPC

November 23, 2016
Faculty/Presenter Disclosure

Faculty:
Dr. Bryan Young

Relationships with commercial interests:
I have no actual or potential conflicts of interest in relation to this educational program
Disclosure of Commercial Support

This program has received financial support from:
South West Local Health Integration Network – Ontario Ministry of Health and Long-Term Care

Potential for conflict(s) of interest:

- Planning committee member, Dr. Gord Schacter
  - Member of Lundbeck Advisory Board
  - Participated in the following clinical trials in the past two years: Novartis, Sanofi Aventis, Bristol Myers Squib
- Planning committee member, Dr. Paul Gill
  - Participated in the following clinical trial in the past two years: DETECT study
Mitigating Potential Bias

- The Planning Committee mitigated bias by ensuring there was no industry involvement in the planning or the education content.
- To comply with accreditation requirements of the College of Family Physicians of Canada and The Royal College of Physicians and Surgeons of Canada, speakers were provided with Declaration of Conflict of Interest forms, which were reviewed by the Regional Stroke Education Coordinator on behalf of the Planning Committee and submitted to the Western University’s CPD Office.
- The Planning Committee reviewed the initial presentation supplied by the speaker to ensure no evidence of bias.
Objectives of this Presentation

- To review best practices for TIA and Stroke in non-designated hospitals
- To review the clinical features of TIAs and ischemic stroke
“Walk-in Strokes” and in-hospital strokes

- Give priority to anyone with acute neurological symptoms.
- Assess quickly: establish time of onset and course. Note comorbidities and drugs.
- Do vital signs.
- ABCs: ensure stability.
- Notify regional/district stroke centre and transport ASAP.

South West Stroke Project
The Quick Assessment: FAST +

- **Face**: lower face droop, asymmetrical smile
- **Arm**: plegic/can’t move the hand (or leg)
- **Speech**: dysarthric or aphasic
- **Time**: of the essence
- **Visual fields**: loss or extinction
- **Eye movements**: gaze preference or palsy
- **Ataxia**: limbs/gait
Subtypes of Stroke

**Ischemic**
- Large artery disease
- Cardioembolic
- Small vessel occlusions
- Cryptogenic

**Hemorrhagic**
- Ruptured berry or mycotic aneurysms
- Ruptured AVMs
- Parenchymal bleeds
  - hypertensive
  - amyloid angiopathy
  - venous thrombosis
  - other: bleeds into tumors, vasculitis, hematological disorders, traumatic.
Etiology of Ischemic Stroke - TIA

Cardioembolic

Large artery

Small vessel

other/Crypto.
## Large Artery Atherosclerosis at Highest Risk


### Actuarial recurrent stroke risks (95% CI)

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<tr>
<th></th>
<th>At 7 days</th>
<th>At 1 month</th>
<th>At 3 months</th>
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<tr>
<td>SVS</td>
<td>0%</td>
<td>2.0% (0–4.2)</td>
<td>3.4% (0.5–6.3)</td>
</tr>
<tr>
<td>CE</td>
<td>2.5% (0.1–4.9)</td>
<td>4.6% (1.3 – 7.9)</td>
<td>11.9% (6.4–17.4)</td>
</tr>
<tr>
<td>UND</td>
<td>2.3% (0.5–4.1)</td>
<td>6.5% (3.4–9.6)</td>
<td>9.3% (5.6–13.0)</td>
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<tr>
<td>LAA</td>
<td>4.0% (0.2–7.8)</td>
<td>12.6% (5.9–19.3)</td>
<td>19.2% (11.2 – 27.2)</td>
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Some Pitfalls

**Hyperacute Phase:**
- Determine when last seen in usual health: beware of wakening with stroke features.
- Get stroke onset time, comorbidities, meds.
- Determine nature of ictus (collapse): seizure activity preceding?
- Course of illness: abrupt/progressive/fluctuating. Go with last time well (the clock starts then).
Illustrative Case: “The Confused Patient”

- 68 year old man is brought into the ER by neighbours who found him to be “ranting and upset” while playing cards with them. When they spoke to him he muttered a few words and then seemed angry and threw his cutlery and dishes around.
- When he was seen in ER he seemed distraught and was sedated with haldol and repeated doses of lorazepam. When he spoke he only stated, “This, this, this ...” and then became angry and cursed. He obeyed the nurse’s commands to settle and put on his pajamas.
“The Confused Patient”

The patient had “Broca’s aphasia”, reduced fluency, trouble with expression and repetitions and preserved comprehension.

- Patients are often distraught with their inability to express themselves.
- The opportunity for thrombolysis was missed.
TIA and Stroke Mimics (30-50%)

- Migraine
- Seizure- Todd’s Paresis
- Other structural Causes:
  - Tumor
  - Cerebral amyloid angiopathy
- Other Neurologic:
  - Myasthenia gravis, Radiculopathy,
  - Mononeuropathy: Bell’s Palsy, Carpal Tunnel Syndrome
- Acute vestibular syndrome
- Transient Global Amnesia
- Syncope
- Panic Attacks/hyperventilation
- Metabolic Causes
- Drugs
- Sepsis
- Conversion Disorder (Diagnosis of Exclusion)
# What Does This Mean for Grey and Bruce County Hospitals?

## Walk-In Stroke and TIA

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Beware the Little Old Lady with Complex TIAs

83 year-old-woman presents with left upper limb paresthesiae spreading to the face over seconds followed by facial weakness and slurred speech – lasting 20 minutes – then resolved.

Exam is normal.

These features are suggestive of seizures, as can be seen following bleeds from amyloid angiopathy. A CT or MRI is needed (often shows blood in sulcus or hemosiderin in cortex).

Anti-thrombotics can cause a hemorrhage in this situation.

CT scan 1 month after using ASA and Plavix.
TIAs and Nondisabling Strokes

Transient Ischemic Attack
Definition

- “Brief episode of neurologic dysfunction caused by focal brain or retinal ischemia, with clinical symptoms typically lasting less than one-hour and without evidence of acute infarction”.
- Risk of subsequent stroke is similar for TIAs and nondisabling stroke.

Many “TIAs” are “ministrokes”
Clues that it is a TIA

- Maximal symptoms at onset
- Symptoms can be localized to vascular territory
- Usually non focal symptoms are **not** due to cerebral ischemia (i.e. lightheaded, faint, generalized weakness)
- Presence or absence of associated symptoms
Common TIA Presentations

- Transient unilateral paralysis/dysfunction: upper or lower limb, face
- Transient loss of vision/teichopsia: hemifield or monocular, binocular
- Transient speech disturbance: dysarthria, aphasia or muteness.
- Diplopia
- Vertigo + other symptoms
Not-so-common Stroke or TIA Presentations

- Oculomotor disturbances
- Limb ataxia, clumsiness
- Perception deficits (neglect phenomena, hemi-inattention, dysnosognosia)
- Apathy/mutism, perseveration, alexia, agraphia, acalculia
- Positive phenomena of movement disorders (hemichorea, hemiballismus, localized dystonia, tremor)
- Bilateral symptoms, e.g. paraparesis, locked-in
Clues that it is not likely a TIA

- Painful limb
- Very brief symptoms (seconds) especially sensory
- Recurrent symptoms (without fixed vascular lesion), especially sensory
- Migratory symptoms
- Bilateral symptoms (except brain stem)
- Loss of consciousness
- Lateralized spasms
Pitfalls in TIA Referrals

- Migraine: Not all have headaches; march of symptoms over 10s of minutes; characteristic visual phenomena and “positive phenomena”.

- Seizures: rarely inhibitory; consider if patient has a previous structural brain lesion; characteristic march over seconds.

- Remember: vascular territory, abrupt onset, negative phenomena, older age, vascular risk factors; headache may occur during the attack.
Approach to possible TIA

- Is it a neurovascular event?
- If Yes- what vascular territory does it localize to?
- Immediate investigations: Brain CT, vascular imaging if possible same time especially high risk symptoms, EKG, blood work.
- Can I identify a possible etiology?
- Start antiplatelet in all – after CT (no bleed or mass lesion); anticoag for atrial fib.
- Urgent assessment stroke prevention clinic
- Follow-up- long term prevention
What is a high risk TIA?

- **Symptoms:**
  - Motor weakness, speech disturbance (in particular aphasia)
  - Duration - the longer - the more concerning for minor stroke

- **Symptom Onset**
  - Less than 48h

- **Imaging**
  - CTA positive
  - DWI positive

- **Etiology**
  - Large vessel disease (extracranial, intracranial, anterior or posterior circulation) - stenosis, thrombus, dissection that is presumed symptomatic
  - Atrial fibrillation
TIA- is an emergency!

WHEN SHOULD WE TREAT?

Fig. 2: Early risk of stroke after discharge from the emergency department among patients with a first-ever TIA (n = 167). Note that half of the cases of stroke occurring within 3 months happened in the first 2 days after TIA.

Gladstone et al. CMAJ 2004
South West Stroke Project
TIA or Nondisabling Stroke Best Practices

- TIA between 48 h - 2 weeks: Evaluate within 24 hours by healthcare professional and in TIA clinic within 2 weeks (max).
- > 2 weeks from event: see within 1 month in TIA clinic
- Atypical sensory symptoms only: neurological consultation as required.
Avoid Delays

- All phases: TIAs, hyperacute stroke syndromes, post-stroke.
- TIAs: refer to TIA or secondary stroke prevention clinic.
- Acute stroke syndrome: immediate referral to regional/district stroke centre (don’t keep in local hospitals).
What to Expect from District/Regional Stroke Centre

- Assessment with NIHSS
- Prompt CT head and vascular imaging
- Cardiac investigation, begin with EKG
- Blood work: CBC, glucose, creatinine, INR, PTT
- Acute strokes considered for tPA ± EVT
- Arterems: TIA pts started on antiplatelet meds (25% reduction in stroke risk), statin, BP meds; anticoagulants for cardioembolic source (reduces stroke risk by 70%); carotid stenosis: endarterectomy (reduces stroke risk by 50%)
Thank you!

Q & A
Upcoming Education

1. Archived recording of this presentation
   - Available via weblink approximately one week post-session

2. Online Learning Module
   - TBD - Winter 2017

3. Online resources
   - http://swostroke.ca/swsp-phase1-education/
Contact Information

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The Dizzy Patient
Illustrative Case

50 year old man with 30 pack-year history of smoking goes to ER with dizziness

- Dizziness is true vertigo (illusion of movement) with nausea.
- Patient mentions coincident numbness in left upper limb.
- Anxious features and dizziness; settles with Ativan and discharged home.
Repeat Visits

- Similar presentation and scenario
- Patient discharged home.
- Returns yet again, very anxious, sedated and admitted overnight.
- The next AM seems comatose
Neurological Exam

- Patient is not comatose, but able to blink eyes and to make vertical eye movements to command and with tracking moving object.

- Cannot voluntarily move eyes laterally, open mouth or move tongue; quadriplegic with extensory plantars and intermittent decerebrate posturing.
Neuro-imaging: basilar artery occlusion with infarction in basis pontis
Subsequent course

- Patient has remained locked-in with tracheostomy and g-j tube.

- Lives in chronic care facility.
Central vs. Peripheral Vertigo

- Suspect central cause if there are any other features, e.g., lateralized motor or sensory features, slurred speech, diplopia, true ataxia.
- Nystagmus rarely accompanies alcohol intoxication.
- Characteristics of nystagmus: direction-changing, vertical, dissociated (INOP)
Acute isolated vertigo (no other neurological deficits)

Nystagmus (Frenzel’s glasses)

- **Spontaneous**
  - Uni Directional
    - HIT
      - Positive
        - VN
      - Negative
        - Suspected Central Vertigo
  - Pluri directional pure vertical/torsional
- Positional
  - Absent
    - Pagnini-McClure Horizontal plane
    - Dix-Hallpike Sagittal plane
  - standing (impossible unassisted)
    - BPPV

1. Diagram of the STANDING approach. VN = Vestibular neuronitis; HIT = head impulse test; BPPV = benign paroxysmal positional vertigo.
HINTS

- Head impulse test
- Nystagmus
- Tests of skew
Head Impulse Test

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Skew Deviation
Skew Deviation

- The eyes move vertically in opposite directions or one eye is above the other (hypertropia).
- Due to deranged input to ocular motor nuclei.
- Cause is usually brainstem or cerebellar stroke.
- Commonly accompanied by a tilt of the head – away from the visual vertical.
Vertebrobasilar Stroke: Characteristics

- Any cranial nerve palsy
- Diplopia
- Bilateral symptoms or signs
- Crossed features: e.g., ataxia on one side, spinothalamic sensory loss on the other.
- True ataxia
- Pseudobulbar palsy
- Vertigo/nystagmus and a long tract
- Previous V-B TIAs, e.g., teichopsia, diplopia