Defining the Need for Specific Neurological Studies

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Defining the Need for Specific Neurological Studies

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When do we need specific Neurological Studies?

- Sudden loss of consciousness
- Headache
- Change in mental status
Sudden LOC: Syncope vs. Seizure
Compare and Contrast

- **Syncope**
  - Gray out of vision
  - Slumps down slow
  - Occurs while standing
  - Convulsive-like tremors but flaccid tone
  - Appears pale white
  - Tongue bite and incontinence rare

- **Seizure (tonic clonic)**
  - Rarely a flash of light
  - Apoplectic thrown down
  - Occurs any position
  - Rigid tone clenched teeth violent shaking, frothing
  - Appears blue
  - Tongue bite common; urinary incontinence some times.
Syncope vs. Seizure

Image(s) have been omitted
Syncope vs. Seizure

- **Syncope**
  - Wakes up groggy, but oriented 1-10 minutes - longer if held upright
  - Headache uncommon
  - Recalls where fell
  - Physical injury minor

- **Seizure**
  - Coma to stupor to severe lethargy - 40 minutes
  - HA common
  - First recall hours later
  - Serious injury common
Syncope vs. Seizure Cont.

- **Syncope: Predisposing**
  - Migraine
  - Female
  - Dehydration
  - Prolonged standing
  - Physical exhaustion
  - Sleep deprivation
  - Sedative hypnotic drugs
  - Antihypertensive drugs
  - Cardiac conditions

- **Seizure: Predisposing**
  - History of seizures
  - Family history of seizures
  - History of head trauma
  - Alcohol binge and withdrawal
  - Benzo withdrawal
  - Some drugs
  - Brain lesions
  - Complex Partial Seizure
Sudden LOC: Syncope vs. Seizure

Usual tests include:

- In patient hospitalization on telemetry
- Imaging: Brain MRI, MRA, CT, CUS, 2DEcho
- Physiology: EKG, EEG, Stress test
- Blood chemistry and hematology
- Consults: medicine, cardiac, and neurology
Lesson One: LOC

- LOC is physiologic
- Imaging rarely makes the diagnosis, but may support the substrate of event
- There is no role for carotid ultrasound or MRA

Image(s) have been omitted

How fast? Dead or alive?
Most Important Data for Syncope

- Good history of precipitants: alcohol, heat, prolonged standing, cardiac, diabetic, sleep hygiene, migraine, cancer co morbidity, polypharmacy
- CBC to rule out anemia
- Orthostatic BP measurements
- EKG and telemetry
- 2D Echo if Cardiomyopathy or valve disease
Most Important Data for Seizure

• Good history of precipitants: family history, febrile convulsions, head trauma, drugs, stroke, brain tumor, AVM, birth defect

• Sleep deprived EEG

• EEG video monitoring
Headache

- When to do MRI?
- CT scanning?
- EEG?
- Blood tests?
- CSF exam?
Primary vs. Secondary Headaches

- **Benign**
  - Long history stereotyped
  - Transient visual aura
  - Wakes from deep sleep
  - One sided
  - Headaches come on gradually over minutes to hours
  - Frequent severe

- **Malignant**
  - Only recently developed
  - Persistent visual disturbed
  - Present on awakening / better as day wears on
  - Midline occipital parietal
  - Instantaneous severe headache; once
  - Frequent mild to moderate
# Primary vs. Secondary

**Benign**
- Sensory symptoms evolve in March over ten minutes
- Light and sound sensitivity
- Nausea with headache severity
- Trouble with concentrating, memory, complex tasks
- Identifiable triggers; foods, hormones, stress, sleep deprivation, alcohol

**Malignant**
- Instantaneous hemi sensory or motor symptoms
- Rare light and sound sensitivity
- Nausea mild all the time or in the morning
- Anomia, change in personality, ataxia or aphasia
- Valsalva may worsen transiently
Lesson Two: Headache

- The severity of headache is inversely related to the severity of the condition
- Brain imaging is diagnostic in less than 1 in 2000 cases
- Blood and CSF testing rarely helpful, except in cases of connective tissue disorders or suspected chronic meningitis
Headache Testing: MRI

- Instantaneous worse headache ever
- Vomiting immediately with above
- New onset of headache in the elderly
- History of malignancy
- Seizure, LOC, or fever with headache
- Prolonged aura or aura other than visual
- Neurological deficit or signs / Meningismus
- Nocturnal incontinence
Headache Blood Tests

What test?
- CBC
- CMP
- TSH
- B12
- ESR/ CRP

Why?
- Subclinical infection or anemia
- Liver, renal, electrolyte
- Hypo/ hyper thyroid
- Malabsorption syndromes
- Temporal arteritis
Change in Mental Status

- The most frequent reason of Neurology and Psychiatry consultation
- Stimulates multiple costly tests
- Reasons for it are usually self evident
What is “Change in Mental Status”

- 10 year history of gradual decline in higher cognitive function
- Inebriation with drugs or alcohol
- Periodic confusion in the elderly related to stress, night time, new prescription medication
- Change in personality, depression agitation, hallucinations
- Aphasia
Lesson Three: Mental Status

- History is more valuable than EEG, MRI, or blood tests in most cases
What do you need to know?

- Is the problem sudden or slow in development?
- What is the age of the patient?
- Has this happened before and in what circumstance(s)? Staring spells?
- Is the problem persistent or episodic?
- Are drugs involved? New starts or stops?
- Are there any triggers to it?
Change in Mental Status Exam: What do you need to know?

- Is the patient alert or drowsy?
- How good is language, naming, repeating, spontaneous speech, comprehension, 3 step follow, memory, mathematics computations?
- Is there a facial droop or pronator drift?
- Check the eyes: Visual fields, eye movements, pupil symmetry, fundi
- Is there hemi sensory loss?
- Reflex asymmetry or up going toes
Mental Status Change: Exam Cont.

- Is the gait apraxic, ataxic, or retropulsive?
- Does the patient have the “I don’t knows”?
- Is there evidence for hallucinations, delusions, paranoia, or pressured speech?
Mental Status Change: Most Common Causes

- Dementia decompensated
- New sedative drugs in the elderly
- Change or cessation of daily medication
- Drug interactions
- Urinary tract or other infection (elderly)
- Dehydration
- Electrolyte abnormalities, liver or kidney, pulmonary disease (hypoxia)
Mental Status Testing

- EEG rarely useful unless coma or seizure suspected
- CMP, B12, Thyroid status
- Eliminate offending drugs or replace those suddenly stopped
- If patient fails to improve: MRI to evaluate for shower emboli, subdural hematoma, frontal meningioma
Lesson Four: Mental Status

- In elderly or demented patients, mental status recovery may take weeks after correcting metabolic or hormonal abnormalities.

- If the episodes are discrete and episodic, Video EEG is more helpful than routine EEG in screening for complex partial seizures.
Summary: LOC / HA / Mental Status Change

- Be relentless in obtaining a good history
- Do a careful neurological exam
- Order tests judiciously in search for the one thing you think has caused the problem
- Share your thinking openly with patient and supportive family