Practical Approach to the Neurologic History and Examination

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Patients Present With...

- Complaints – either specific or vague
- Very little knowledge or concern over which “specialty” or “body system” that is affected
- Physicians must rapidly and efficiently narrow down complaints into usable information to begin the diagnostic process
- The medical history is our most important tool
Neurologic Complaints

- Pain
- Dizziness
- Loss/Altered Consciousness
- Cognitive Difficulties
- Visual Disturbance
- Speech Difficulties
- Swallowing Difficulties
- Taste/Smell Alteration
Neurologic Complaints

- Numbness/Altered Sensation
- Weakness/Muscle Complaints
- Tremor
- Gait Difficulties
- Bladder and Bowel/ Sexual Disturbances
3 Min Neuro Exam: Tools

- Ophthalmoscope
- Reflex hammer
- Straight pin
- Vibrating tuning fork
3 Minute Neurologic Examination

- History (screen cognition, speech)
- Fundi
- EOM (horizontal and vertical eye movements)
- Strength (deltoid, fingers, hip flexors, rapid movements of hands and feet)
- Finger/nose
- Reflexes
- Sensation (pinprick crossed proximal/distal and vibration in the feet)
- Gait (walk, heels, toes, tandem)
Pain

- Standard pain history (location, character, radiation, aggravating/relieving factors, progression)
- Headache:
  - Episodic
  - Aura/accompanying neurologic symptoms
  - Nausea, photophobia, phonophobia
  - Effect of exercise/bending over
  - Effect of posture
  - Temporal profile
  - Medication taken (daily/weekly/monthly – include OTC)
  - Triggers (hormonal, food, environment, stress, depression)
Headache: 3 Min Neuro Exam Plus

- Check neck ROM and check trigger points
- Look at pupils
- Look at the head and area of pain!
- Palpate the temporal arteries
Pain

• Back Pain:
  o Radiation – define carefully
  o Leg vs. back
  o Associated weakness, numbness, gait, bladder, bowel
  o Secondary gain
  o Treatments sought
  o Medication taken – narcotics and long term muscle relaxants ineffective

• Neck Pain:
  - periscapular pain
Pain: 3 Min Neuro Exam

Plus

- **Back Pain:**
  - Straight leg raise
  - Atrophy
  - Reflexes (knee is L3/4, Hamstring is L5, ankle is S1)
  - Dermatomal sensation
  - walk on heels and toes

- **Neck Pain:**
  - Move neck into extension to the side of pain
  - Reflexes (bicep C5/6, tricep C7, supinator C6, finger jerk C8)
  - Dermatomal sensation
Dizziness

• Vertigo
  o Sensation of movement
  o Often triggered by movement
  o Episodic
  o Vertigo in isolation is not CNS
  o Gait disturbance/limb incoordination

• Non Specific
  o Vague, continual, difficult to describe, presyncope

• Remember Heart/ Lungs/Metabolic
Dizziness: 3 Min Neuro Exam Plus

- **Nystagmus:**
  - Check horizontal gaze (rotatory is peripheral)
  - Check vertical gaze ((vertical nystagmus is central)

- **Hearing:**
  - Conductive hearing loss – tuning fork behind the ear

- **Cerebellar function:**
  - Scanning dysarthria
  - Limb ataxia (finger nose and rapid movements)
  - Gait/tandem – midline cerebellar function
Loss/Altered Consciousness

- **Seizure**
  - Focal onset (taste, smell, deja-vu, disembodiment, rising sensations, visual alterations) – often occur in isolation, often brief
  - Confirm episode (talk to witness), ask about movement, changes in breathing, incontinence, tongue biting, injury
  - Define post ictal – muscle aching, fatigue, confusion
  - Carefully search for prior episodes, nocturnal seizures
  - Often no trigger (not postural, exertion)
Loss/Altered Consciousness

- **Syncope**
  - Triggered (postural change, hunger, exhaustion, fear)
  - Ask about palpitation, associated symptoms (sweating, pale, tremulous, nausea)
  - Remember can have jerking movements and incontinence
  - Not truly post ictal
LOC 3 Min Neuro Exam
Plus

- Should be normal
- Check pulse, BP
Cognitive Difficulties

- Dementia
  - Multiple cognitive domains (memory, executive functioning, attention, language, visuospatial)
  - Generally perceived first by others
  - Ask about ADL (cooking, banking, driving, shopping, social activities) and work (difficulties, complaints, demotions)
  - Personality change
  - Sleep change
Cognitive Difficulties

- Pseudo dementia
  - Generally memory (short term), attention/concentration, word finding difficulties
  - Explore depression, anxiety, stress, sleep
  - Generally noticed mainly by the person and of great concern
  - Generally functioning normally
Cognitive: 3 Min Neuro Exam Plus

- **Listen carefully:**
  - Do not let the accompanying person answer
  - Engage in general conversation to put patient at ease and to truly listen
- **MMSE and /or MoCA**
- **Frontal Release Signs**
- **Good physical and bloodwork**
Visual Disturbance

• **Loss of Vision**
  - Unilateral (eye) vs. field defect (brain) – cover/uncover
  - Positive or negative symptoms
  - Timeframe (sudden vs. subacute; brief vs. prolonged)
  - Associated symptoms (headache, eye pain)
  - Past history of migraine, stroke, neuro symptoms

• **Diplopia**
  - Cover/uncover (never triple)
  - Direction of gaze where maximal
  - Timeframe/associated symptoms/past history
Visual: 3 Min Neuro Exam Plus

- **Visual loss:**
  - Acuity
  - Visual fields (finger counting)

- **Diplopia:**
  - Extra-ocular eye movements (while asking patient what they see)
  - Cover each eye in turn if diplopia
  - Look for ptosis (sustain upward gaze for 1 minute)
  - Look at the eyes for protuberance
Speech Difficulties

- **Dysphasia**
  - Speech output (word substitutions, fluency, word finding)
  - Comprehension (following conversations, commands, understanding television/radio)
  - Reading and writing

- **Dysarthria**
  - Only mechanical abnormality
  - Swallowing often involved

- **Benign**
  - Mild word finding difficulty
Speech: 3 Min Neuro Exam

Plus

- Listen to speech
- For dysphasia – conversation, commands, naming, reading and writing
- Do palatal (kuh), lingual (tuh), labial (puh) sounds
- Quality of disturbance:
  - Hoarse/Nasal – neuromuscular or laryngeal
  - Scanning/irregular – cerebellar
  - Slow and laboured, slurred – upper motor neuron (check jaw jerk and facial spasticity) or lower motor neuron (check for tongue fasiculation)
Swallowing Difficulties

- **Neuromuscular**
  - Liquids often more difficult than solids
  - Fatigable (worse as meal progresses)
  - Often dysarthria
  - Ask about weight loss, pneumonia

- **Mechanical**
  - Solids first
  - Sticking sensation/regurgitation

- **Benign**
  - Variable, no weight loss
Swallowing: 3 Min Neuro Exam Plus

- Listen to the speech as neurologic dysphagia does not occur in isolation:
  - Hoarse/nasal
  - Slurred/spastic
- Look at the tongue (fasiculation) and mouth
- Check for fatiguable weakness (arms, legs)
Taste/Smell Alteration

- Taste is smell (tongue – bitter, salt, minimal sweet – protective)
- Cooking, eating, perfumes and scents, smoke
- Onset (abrupt or gradual)
- Nose congestion, pain, other symptoms
- Medication changes (herbals)
- Head injury, headache
Taste/Smell: 3 Min Neuro Exam Plus

• Just use a common smell (soap or hand sanitizer)
Numbness/Altered Sensation

- **Distribution**
  - unilateral, single limb (dermatomal vs. radicular), stocking glove, face, crossover

- **Characteristic**
  - Negative (lack of sensation – ask about temperature and pain perception)
  - Positive (paresthesia)
  - Neuropathic pain (burning, freezing, lancinating, hypersensitivity) – walking in bare feet
Numbness/Altered Sensation

• Onset:
  o Abrupt, subacute, gradual
  o Triggers (infection, medication, injury)

• Accompanying symptoms:
  o Pain – back, neck, limb
  o Weakness
  o Gait/balance changes – walking on uneven ground or in the dark, shower with eyes closed, rapid rotational changes/ pivoting
  o Bladder/bowel/sexual/sweating and autonomic
Sensory: 3 Min Neuro Exam Plus

- **Lateral columns (pain and temperature):**
  - Stocking glove with pinprick
  - Dermatomal
  - Sensory level
- **Posterior columns (vibration and joint position sense):**
  - Tuning fork on toes and 5th fingers; move up until felt
  - Rhomberg
- **Face (corneal reflex and nasal tickle)**
Weakness/Muscle Complaints

- **Distribution:**
  - Global (general fatigability)
  - Focal (face, arm(s), leg(s))
  - Unilateral/bilateral
  - crossed

- **Onset:**
  - Acute/subacute/gradual

- **Triggers:**
  - Injury/concurrent illness/medication
  - Associated pain or myalgia
Weakness/Muscle Complaints

• **Functional Difficulty:**
  - Most important
  - Upper extremities – overhead fatigability, manual dexterity (not dropped coffee cup!)
  - Lower extremities – changes gait such as stumbling, shuffling, slowness - proximal weakness (chairs, tubs, toilet) - downstairs>upstairs
Weakness/Muscle Complaints

- **Specific muscle symptoms:**
  - Cramping – nocturnal vs. daytime (ETOH, hydration, diet, change exercise, muscle weakness)
  - Myalgia
  - Fasciculation – general vs. focal; prolonged vs. sporadic
  - Wasting – focal vs. generalized (always associated weakness)
Motor: 3 Min Neuro Exam Plus

- **Observe:**
  - bulk (measure)/fasiculation

- **Muscle Tone:**
  - Fine rapid movements

- **Muscle strength:**
  - CNS – pyramidal distribution of weakness (distal hand and hip flexor) – tapping fingers and feet!
  - PNS – distal weakness hands/feet
  - Muscle – proximal (get out of chair or off floor)
Motor Neuro Exam

- **Reflexes:**
  - Increased in CNS, decreased in PNS, normal in muscle disease
  - Biceps (C5/6), triceps (C7), supinator (C6), finger jerk (C8), knee (L3/4), hamstring (L5), ankle (S1)
  - Toes – Babinski in CNS

- **Gait:**
  - Observe walking in and out of the office
  - Walk on toes and heels, hop, run
  - Look at the shoes
Tremor

- **Resting:**
  - Explore other symptoms of Parkinson’s (bradykinesia, rigidity, postural instability)

- **With Activity**
  - Aggravating (caffeine, stress)/Relieving (ETOH)
  - Family history
  - Head and voice tremor
  - Coordination issues and balance
Tremor: 3 Min Neuro Exam Plus

- Observe at true rest
- Observe with arms and hands extended forward
- Finger nose
- Check for cogwheeling rigidity
- Gait – step size, pivot, check for retropulsion
Gait Difficulties

- Define – slow, stiff, shuffling, stumbling, tripping, balance
- Falls? – trigger, frequency, injury
- Can you keep up?
- Noticed by others?
- Associated symptoms – weakness, numbness, bladder/bowel/sexual, pain
Gait: 3 Min Neuro Exam
Plus

- Observe walking in and out of office
- Observe pivoting
- Walk on heels and toes
- Hop and run
- Tandem
- Look at the shoes
Bladder and Bowel/ Sexual Disturbances

- All 3 go together – ask!
- **Bladder:**
  - Urgency, frequency (night and day), hesitancy, dribbling, incomplete emptying, incontinence, infections, pain
- **Bowel:**
  - Urgency, constipation, incontinence
- **Sexual Disturbance:**
  - Men – ED, premature ejaculation
  - Women – lubrication, ability to orgasm
Bladder/Bowel: 3 Min Neuro Exam Plus

- Rectal tone
- Cremasteric reflexes in males
Summary

• Careful specific symptom based history along with a symptom specific neurologic exam allows answers to the following questions:
  o Neurologic or not (most important)
  o Localize the lesion (partially – brain, cord, peripheral)
  o Define the lesion (perhaps)
  o Define where and how to image/test
  o Define need to refer (helps neurologist to triage the referral)
Questions?