Neurotrauma Nursing: Neurological Assessment

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Objectives

• List five components that make up the neuro exam of the critically ill patient
• Name the most sensitive component of the neuro assessment
• Describe the difference between decorticate & decerebrate posturing
• Describe pupillary assessment and what to report to MD
• Describe the difference in the neuro assessment of the conscious – vs- unconscious patient
Neuro Assessment

• Purpose
  • Evaluate the function of the nervous system
  • Detect nervous system dysfunction
  • Monitor response to treatment
  • Evaluate patient outcomes
  • Identify teaching needs
  • Determine highest level of functional ability

• Components
  • History
  • Physical Exam
• Precipitating Events
• Family History
• Medical Surgical History
Physical Exam

- Components
  - Vital Signs
  - Consciousness
    - Glasgow Coma Scale
  - Motor Function
  - Sensory Function
  - Cranial Nerve Function
  - Reflexes
Glasgow Coma Scale

• Quick and easy way to describe baseline LOC
• Tests
  • Eye Opening
  • Verbal
  • Motor Response
• Highest score possible: 15
• Lowest score possible 3
Level of Consciousness

• LOC is the MOST important part of a Neuro exam!!
• A change in LOC is the earliest & MOST sensitive indication of a change in the patients’ neuro status!
• Sedation should be stopped or decreased for an accurate assessment
Level of Consciousness

• **Arousal**: lowest level. Focuses on the patient’s ability to respond to verbal or noxious stimuli in an appropriate manner.

Vs.

• **Awareness**: higher-level function. Assesses orientation to person, place, time, & events
Level of Consciousness

• **Full Consciousness:** Alert, awake, responds appropriately to stimuli, follows commands.

• **Confusion:** Disoriented, short attention span, agitated, restless, may have hallucinations.

• **Lethargic:** Drowsy, delayed response to stimuli, slow in speech and mental process, & may drift off to sleep during exam.
Level of Consciousness

- **Obtunded**: Able to arouse with stimulation very drowsy. Response is minimally maintained. Indifference to external stimuli exists.

- **Stuporous**: Minimal spontaneous movement. Verbal responses are minimal & incomprehensible. Requires vigorous stimuli to elicit a response.

- **Comatose**: Awareness & arousal are absent. No response to verbal or painful stimuli.
Motor Exam

• **Strength Scale**
  - 0 = Flaccid
  - 1 = Muscle Contraction
  - 2 = Lateral movement only
  - 3 = Raise against gravity but unable to sustain
  - 4 = Can raise and sustain against gravity
  - 5 = Normal

*Key element:*

*Compare strength between right and left side of body*
Motor Exam

- **Noxious Stimuli = PAIN**
- Two categories
  - Central: the brain responds
  - Peripheral: the spine responds

 debacle

*Note: Use the least amount of stimulus to elicit a response*
Cerebellar Exam

• Upper Extremity Coordination
  • Finger to Nose Testing
  • Rapid Alternating Finger Movements
  • Rapid Alternating Hand Movements
    • Place palm and then dorsal side of the hand on thigh rapidly

• Lower Extremity Coordination
  • Heel to Shin
  • Gait
Central Pain Stimulus

- **Trapezius Squeeze**: angle where neck & shoulder meet. Using thumb & two fingers take hold and squeeze.
- **Sternal Rub**: usually done with the knuckles in a grinding motion. (if done repeatedly, this will bruise the patients chest)
Peripheral Pain Stimulus

• **Nail bed pressure:** Using a pen or pencil laid across the base of the cuticle, apply **firm** pressure.

✿*Note: Elicited response may be a reflex response and may not be a true indicator of level of consciousness.*
Posturing

- **Decorticate:** flexion posturing
- **Decerebrate:** rigid extension
Sensory Exam

Dermatomes
Cranial Nerves
Pupillary Response

• Extremely small pupils
  • Possible narcotic/sedative overdose
  • Therapeutic levels of narcotics/sedatives
  • Lower brain stem compression
  • Bilateral damage to the Pons

• Large pupils
  • Instillation or use of Atropine, scopolamine
  • Indication of extreme stress
Pupillary Changes

- Change or inequality in pupil size, reaction, especially in patients who have NOT shown this discrepancy before, IS A SIGNIFICANT neurological sign!
- Unilateral pupil dilation may indicate herniation and should be reported IMMEDIATELY
Rapid Neuro Exam

- Conscious Patient
  - LOC
  - CN assessment
  - Motor assessment
  - Sensory assessment
  - Respiratory pattern
  - VS
  - Change in status

- Unconscious Patient
  - LOC
  - CN assessment
  - Motor assessment
  - Respiratory pattern
  - VS
  - Change in status
Analyzing the Data

• What do I see?
• What does it mean?
• How does it relate to the previous assessment?
• How am I going to proceed?
When to notify the Physician

• If neurological status deteriorates with or without changes in hemodynamic status
• If CSF drainage develops
• New onset of seizures
Emergency!!!

- Notify MD Immediately
  - Unilateral pupil dilation
  - New onset of posturing
  - Loss of Cutaneous Reflexes (cough and gag)
Conclusion

• The neuro exam should be organized, thorough, & simple.
• Findings should ALWAYS be evaluated in comparison to previous exams
• ANY neurological deficit identified that is NEW or DIFFERENT from that of the last assessment, should be focused on in detail & reported.