Examination of A Comatose Patient

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Coma

• *Coma is a state of unarousable unresponsiveness*

• Alteration of arousal are a spectrum of abnormalities that range from being alert to unresponsive (comatose)

• Lethargy, stupor, delirium are descriptors of various states of awareness
  – Stupor- State of partial responsiveness with partial consciousness
  – Delirium- Altered state of awareness with confusion
Level of Consciousness

• **Alert**
  – normal awake and responsive state

• **Lethargic**
  – easily aroused with mild stimulation. Can maintain arousal.

• **Somnolent**
  – easily aroused by voice or touch; awakens and follows commands; requires stimulation to maintain arousal

• **Obtunded/Stuporous**
  – arousable only with repeated and painful stim; verbal output is unintelligible or nil; some purposeful movement to noxious stim

• **Comatose**
  – no arousal despite vigorous stimulation, no purposeful movement- only posturing, brainstem reflexes often absent
Localization of Coma

• **Diffuse brain dysfunction**
  – metabolic encephalopathy
  – status epilepticus

• **Supratentorial structural lesions**
  – bilateral hemispheric lesions
  – bilateral thalamic lesions

• **Infratentorial structural lesions**
  – brainstem lesions or compression
Evaluation of Coma

• History
  – seek historical data from friends & family

• Physical Examination
  – Vitals (ABC)
  – Observe appearance and behavior
  – Assess movements & response to stimuli
  – Skin
  – Respiration
Evaluation of Coma

• Neurological Examination
• May vary with degree of impairment
  – Level of responsiveness
  – Pupillary responses
  – Eye movements
    • Reflex eye movements
  – Fundoscopic examination
  – Motor examination
  – Reflexes
  – Meningeal signs
Respiratory Patterns in Coma

- **Cheyne Stokes breathing**
  - Bilateral hemispheric lesions
  - Increased intracranial pressure
  - Cardiopulmonary dysfunction
- **Central Neurogenic Hyperventilation**
  - Brainstem lesions
- **Ataxic breathing**
  - Medullary lesions
- **Apneustic breathing**
  - Pontine or cervico-medullary junction
- **Slow regular breathing**
  - Drug intoxications
  - Severe hypothyroidism
Cranial Nerve Findings

- Pupil
  - Size, shape, equality/symmetry and reactivity
- Eye movements
  - Position at rest (nystagmus)
  - Oculocephalic movements
  - Cold caloric testing
- Corneal
- Facial muscles
- Gag reflex
Motor Examination

• Observation
• Muscle tone
• Response to stimuli
  – Decorticate posturing
  – Decerebrate posturing
Sensory/Reflexes

- Pain sensation
- Biceps/Knee/Ankle
- Plantar responses
Signs of Herniation in Coma

- Abnormal respiration
- Fixed or minimally reactive pupils or asymmetric dilated pupil
- Gaze deviation
- Decerebrate or decorticate posturing
- Transient hypertension
- Bradycardia