EMC 370 Introduction to Medical Emergencies

02 Coma

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Outcomes for This Lecture

At the completion of this lecture, the learner will be able to:

- Discuss the pathophysiology of coma and altered mental status (5-3.8)
- Identify the need for rapid intervention and transport of patient with coma (5-3.6)
- Discuss in detail the management of non-traumatic coma (5-3.7)
- Discuss the assessment findings used for coma (five-3.5)
- Discuss the limitations of such terms as lethargy, stupor, and obtundation

Outcomes, continued

- Discuss the initial maneuvers and early diagnostic and therapeutic management of the unconscious patient
- List the medications, dosages, indications, contraindications and route of administration used for coma
- List the common causes of coma in the emergency population
- Discuss the anatomic basis of consciousness
- Discuss the anatomical areas of injury in altered consciousness
- Compare and contrast toxic/metabolic with structural/focal injuries

Clinical Management Plan

- Recognizing patient acuity:
  - consider coma life-threatening until proven otherwise
- Anticipate problems and act before they occur:
  - prevent hypoxia, aspiration with aggressive air management
- Coma case management ≠ brief protocol
  - Algorithmic management plan in detail

A L O C

- LOC status: the most sensitive indicator of the advancing CNS disease
- Functional (non-lateralizing) changes in ALOC:
  - greater than structural (focal) changes
  - usually the first sign of CNS pathology
  - may result from non CNS origin
  - always precede structural changes

Emergent Neurological Signs and Symptoms

Sx. / Sn.	Associated Disorder	
ALOC	CNS	coma
		confusion
		stroke
		syncope
		seizures

Altered Consciousness

- Epidemiology: 0.5-1% of ED admissions
- Definition: Eyes closed with inappropriate response to stimuli
  - Avoid terms such as stupor, obtundation, and lethargy
    - used so inexactly that they have little meaning
  - Continuum of unresponsiveness
  - Requiring moment to moment reassessment of patient responses to stimuli

Anatomic Basis of Consciousness

- ALOC does <u>not</u> result from <u>uni</u>lateral hemispheric disease (CVA) by itself
- ALOC occurs <u>only</u> when there is injury to:
  - both hemispheres
    and / or
  - brain stem (ARAS) (upper pons and midbrain)

Pathophysiology of Coma

- <u>Structural</u>
  - Primary C N S or trauma
    - C V A
    - intracranial trauma (subdural,…)
  - Neoplasm
- <u>Non structural</u>
  - Toxic/metabolic
    Alcohol
    Hypoglycemia
    Systemic disease
    Infectious
    Congenital
    Nutritional
    Environmental

Approach / ALS

- Not *<u>what</u>* the cause of the problem is
- Stable or unstable?
- Do something right now!
- Exactly what all is wrong, diagnosis,... ?
  - not now; later

Scenario

It was a warm August night. Dispatch tones out EMS for a "man down." The location was a downtown auditorium at the site of a rock concert. Reportedly, the patient is unresponsive and breathing. Upon arrival the paramedics found a huge crowd of "Dead headers " in line to enter the concert. One of the young persons was waving and motioning to come in the direction of an approximately 20 YOM. The young man appears to be unresponsive. As you approach the patient, you ask who is with this man and no one answers. What was the most appropriate initial approach and management for this patient?

[Based on real case in Cincinnati Ohio, several years ago]

Unresponsive Patient

- Unresponsive 20 YO "dead head "
- No history
- What was done by the Ohio paramedics?
  - BP: 142 / 86
  - HR : 120
  - RR : 18
  - Transfer to local hospital
- What was done by the ED staff?
- What would you do?

Ask not *what* the cause of the ALOC is. Do something !

- Paramedic and ED physician responsibility
  - Address immediate life threats
  - Determine *that* a neurological problem exists
  - Determine *that* any associated critical conditions are identified and treated

Orderly Approach

- Initial CABCDE / CO_2M_3EBIG
- VS
- Hx
- PE
- Reassessment
- Diagnostic concerns
- Procedures / patient response to procedures
- Disposition / communication

Stabilization prior to completely assessing exactly what's wrong!

- C
- A
- B
- C
- D
- E

Brief History

- Chief Complaint
- PMH (past medical history)

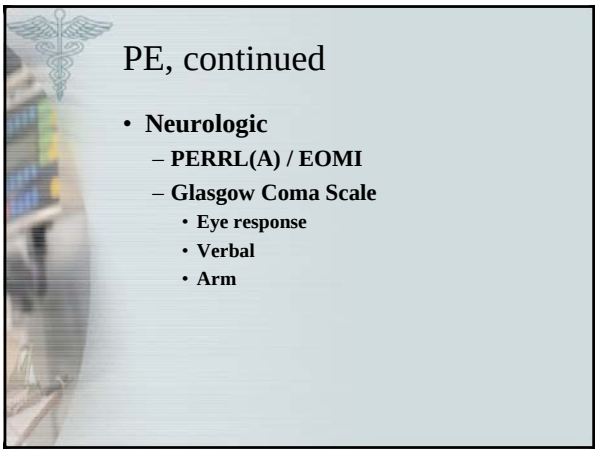
Brief Physical Exam

- Primary survey
  - C-spine
  - VS
    - Resp. rate, pattern, and quality
    - Increased BP (Increased? Why?)
    - HR (Increased or decreased? Why?)
  - Head to toe examination
  - Trauma signs

PE, continued

Neurologic

- Consciousness
  - Alert and oriented
  - Verbal stimulation response
  - Pain stimulation (eye response; extr. response)
  - Unresponsive
- Speech (clear or not)
- Movement (position and pain)
  - all extremities?
    - To verbal
    - To pain (flexion, extension)


PE, continued
• Neurologic
– PERRL(A) / EOMI
– Glasgow Coma Scale
• Eye response
• Verbal
• Arm