

Patient in Coma

Objectives

- Review the neurologic evaluation of the patient in coma
- Review the differential diagnosis of coma
- Discuss the indications for diagnostic testing in the patient with coma of undetermined etiology

Definitions

- **Lethargy – decreases responsiveness but arousable**
- **Stupor – diminished awareness, arousable only with vigor stimulation and patient does not interact in a meaningful way**
- **Coma – diminished awareness, patient can not be aroused even with vigorous stimulation. Response to noxious stimulation tends to be stereotyped or reflexive**

The Physical and Neuro Exam in Coma

- **Assess ABC's, pupils, and skin: Toxic syndromes**
 - Swallowing
- **Assess for responsiveness: GCS, AVPU**
- **Assess pupils for reactivity, deviation, nystagmus**
- **Brainstem function**
 - Doll's eyes / Cold calorics
- **Assess for asymmetry and posturing**
 - Decorticate posturing is not prognostic nor diagnostic
 - Decerebrate posturing is increased ICP
- **Assess muscle tone and reflexes**
- **Babinsky and Rectal tone**

Pearls in the Evaluation of a Patient in Coma

- **Pupils**
 - Generally remain reactive coma from metabolic or infectious etiologies
 - Pin point pupils seen in opioid, alpha adrenergic, and cholinergic overdoses; and in pontine infarct
 - Dilated pupil(s) seen in uncal herniation due to compression of parasympathetic fibers on 3rd nerve
- **Locked in syndrome results from brainstem infarct**
- **Doll's eyes and cold calorics test for brainstem function**
- **Minimal twitching or automatism may be only indication that patient is seizing**

Diagnostic Testing

- **Non contrast head CT**
 - Acute blood
 - Space occupying lesion
- **MRI**
 - Posterior fossa
 - Early infarct
- **LP**
 - Xanthochromia
 - Infection
- **EEG**

Nonconvulsive Status Epilepticus (NCS)

- **Change in behavior or mental status which is associated with diagnostic EEG changes**
- **Lack of a predominant motor component**
- **Classification:**
 - **Absence Status (primary generalized process)**
 - **Complex Partial Status (focal in origin)**

Clinical Characteristics

- **Altered behavior varies from subtle changes only recognizable to family members to psychotic or affective states all the way to coma.**
- **Symptom fluctuations can occur with varying degree of impairment which contributes to obscuring the diagnosis**

Epidemiology

- Towne et al: Prospective study of 236 patients with coma and no clinical evidence of seizures 8% met criteria for NCS on EEG
- DeLorenzo et al.: NCS present in 14% of pts after control of NCSE
- Privitera et al: Prospective study of 198 pts with altered consciousness but no clinical convulsions who were referred for emergency EEG, 37% showed EEG evidence of NCS

Towne AR. Neurology 2000
DeLorenzo RJ. Neurology 1996
Towne AR. Epilepsia 1998

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Precipitating Factors

- **Metabolic Abnormalities**
- **Infection**
- **Drug toxicity**
- **Alcohol intoxication/withdrawal**
- **Pregnancy**
- **CNS disturbance**
- **ECT treatment**

EEG

- A properly performed EEG is helpful in establishing etiology and directing therapy
- A “normal” EEG does not exclude an epileptic focus
- EEG indicated in patients with altered mental status suspected of NCSE

Questions??

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