

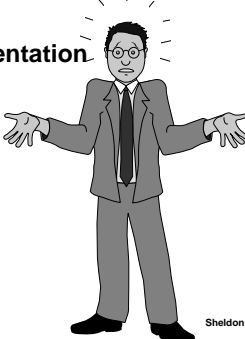
**Delirium In the ED**


**Sheldon Jacobson MD, FACEP, FACP**  
**Chairman, Emergency Medicine**  
**Mount Sinai School of Medicine**

**Delirium**

---

- **Case Presentation**




Sheldon Jacobson, MD 

**Case presentation**

---


- **A sixty year old woman is brought to the ED for evaluation of a change in mental status. She has metastatic breast cancer and is receiving chemotherapy. She is lethargic confused and alternatively agitated and somnolent. On physical exam. VS- T-37.5°, P-104, BP-100/67, POX 95%**

Sheldon Jacobson, MD 

**Case cont.**

---


- **She is dehydrated, disoriented, does not pay attention to the examiner. She is pale, mildly icteric and her liver is enlarged and irregular. Neuro-nonfocal exam. Bilat. snout, grasp and Babinski reflexes. There was no tremor, asterixis or myoclonic jerks**

Sheldon Jacobson, MD 

**Case Presentation-Mental Status Examination**

---


**The patient was oriented as to person and place but did not know the date. She was lethargic and would doze off in the midst of a sentence. She would answer questions with a simple yes, no I don't know answers. She did not interact with her family who were at the bedside.**

Sheldon Jacobson, MD 

**Case Presentation-Mental Status Examination**


---

- **Mini-mental status examination—score 20/30 (positive test)**
- **CAM score 4/4 (positive test)**

Sheldon Jacobson, MD 


### Further Evaluation of Our Case

- What is the working diagnosis here?  
Brain met? Psychosis? Delirium?  
Dementia? Malingering?
- What other information would you like to have?
- What lab tests do you need?

Sheldon Jacobson, MD 


### Delirium

- AKA
  - Acute Confusional State
  - Toxic Psychosis
  - Delirium Tremens
  - Metabolic Encephalopathy
  - Acute organic psychosis

Sheldon Jacobson, MD 


### Delirium-Definition

An acute reversible diffuse neuronal dysfunction usually due to a toxic-metabolic derangement, characterized by inattention, disorientation, misperceptions, agitation and/or somnolence, hallucinations, acute memory disturbances and paranoid ideation

Sheldon Jacobson, MD 


### Delirium-Variants

- Agitated delirium e.g. delirium tremens-autonomic hyperactivity and instability
- Quiet delirium-withdrawn, clouded sensorium, inattentive
- Alternating

Sheldon Jacobson, MD 


### Delirium-Pathophysiology

- Reversible neuronal dysfunction often due to toxic or metabolic disturbances but in other cases causal process is as yet unknown e.g. ICU and post-op delirium
- Sensory deprivation
- Sleep deprivation

Sheldon Jacobson, MD 

### Delirium-Pathophysiologic Correlates


- Underlying dementia
- Central anticholinergic states or decreased Ach prod.
- Diffuse slowing of the EEG
- Decreased A-V O<sub>2</sub> difference across the brain

Sheldon Jacobson, MD 

### **Causes of Delirium-Systemic Diseases**

---


- Hepatic failure
- Uremia
- Ventilatory failure
- Sepsis
- Hypertensive Crisis
- Heart failure, dysrhythmia,
- Heat stroke, hypothermia

Sheldon Jacobson, MD 

### **Delirium-Metabolic Causes**

---


- Electrolyte Abnormalities
- Hyper and hypoglycemia
- Acidosis/alkalosis
- Osmolar Crises, hyper and hypo

Sheldon Jacobson, MD 

### **Delirium-Toxic Causes**

---


- Ethical Drug Intoxication/Effect, Polypharmacy
- Recreational Drug Effect/Toxicity
- Drug withdrawal
- Nutrient Deficiency- B<sub>6</sub>, B<sub>1</sub>, B<sub>12</sub>, Niacin
- Environmental- Poisoning- CO, CN, Bites, Dysbarism, Toxic Plants

Sheldon Jacobson, MD 

### **Delirium-History**

---


- Acute change in mental status
- Frequently underlying dementia
- Polypharmacy
- Exacerbation of systemic illness or other concurrent stressors e.g. surgery, ICU
- Hallucinations, delusions, paranoia, liability

Sheldon Jacobson, MD 

### **Delirium-Physical Examination**

---


- Abnormal vital signs, inattention
- Toxidromes-cholinergic, anticholinergic, adrenergic, opioid, hallucinogen, sedative
- Focal findings seen in some intoxications
- Myoclonic jerks, asterixis, tremor, seizure, frontal release
- Fluctuating signs
- Evidence of systemic disease- dehydration, hypoxia, liver or renal failure, CHF, COPD

Sheldon Jacobson, MD 

### **Delirium-Laboratory Work-up**


---

- Metabolic panel include lactate and ABG
- LFTS, Tox Screen, Carboxy Hb
- Sepsis work-up
- EEG
- Brain imaging/ LP

Sheldon Jacobson, MD 


### **Delirium-Memory Testing**

- A) Primary memory (immediate recall) stored in reticular activating system tested by serial digits
- B) Secondary (recent) memory stored in the limbic system, tested by 3 objects in 3 minutes
- C) Tertiary memory (remote events) stored in the association areas of cortex, tested by asking about verifiable remote events

Sheldon Jacobson, MD 


### **Primary Memory Testing**



Sheldon Jacobson, MD 


### **Modified Mini-mental Status Exam. (used to diagnose cognitive impairment)**

- 5-Time Orientation- date, day, season
- 5-Place Orientation-City, State, Building
- 5-Attention-serial 7s
- 3-Registration of 3 objects (instant memory)
- 3-Recall-3 objects in 3 min. (recent memory)
- 9-Language-name 2 objects, repeat "no ifs ands butts, 3 stage command, write sentence, copy design (23 or less=cognitive abnormal.)

Sheldon Jacobson, MD 

### **Confusion Assessment Method-CAM Score**


- Feature 1-Acute onset and fluctuating course of cognitive/behavioral impairment
  - Feature 2-Inattention (distractibility)
  - Feature 3-Disorganized thinking
  - Feature 4-Altered level of consciousness
- Positive test- 1&2 + 3 or 4

Sheldon Jacobson, MD 

### **Orientation-Memory-Concentration Test**

Am Jl. Psych. Vol. 140, pg 734, '83


- What is the Year, Month, Time?
- Count backwards from 20 and name the months in reverse order
- Repeat: John Brown, 42 Market Street, Chicago
- Remember the phrase @ 3 min.

Sheldon Jacobson, MD 

### **ED Prevalence and Documentation of Impaired Mental Status in Elderly**

Hustey Annals vol. 39 No. 3 March '02

- 26%(78/297) of patients had altered mental status
- 10%(30/297) had delirium
- 70% of patients discharged home with cognitive impairment had no evidence available that the mental status abnormal was chronic

Sheldon Jacobson, MD 


**Delirium and Other Cognitive Impairments  
in Adults in the ED**

---

Naughton et al. Annals 25, No. 6, June '95

**Using GCS, MMSE & CAM test on  
patients 70 or older**


- 40%: altered mental status
- 8.5%: delirium
- 9.6%: dementia
- 21%: cognitive impairment without delirium

Sheldon Jacobson, MD 

**Delirium in the Emergency Department  
Older Patients**

---


- 26-40% are cognitively impaired
- 25% of these have delirium
- 50% of these have dementia
- Prevalence increases with age
- Patients with delirium have higher Apache scores and short term mortality
- Retrospectively, 25-40% cases not diagnosed and 38% of delirious patients discharged

Sheldon Jacobson, MD 

**Delirium-Differential Diagnosis  
CNS Diseases**

---


- Nonconvulsive status, (post ictal)
- Stroke, Meningitis, Encephalitis, SAH, Trauma, Hydrocephalous
- Dementia

Sheldon Jacobson, MD 

**Differential Diagnosis-  
Psychiatric Illness**

---


- Depression
- Psychotic episode
- Malingering

Sheldon Jacobson, MD 

**Consequences of Missing  
Delirium In ED**

---


- **↑**Short term mortality- missing the treatment window
- Inappropriate treatment
- Unreliable history
- Poor compliance
- Falls

Sheldon Jacobson, MD 

**Delirium- Immediate Prognosis**

---

- Prognosis varies with the underlying reversible cause

Sheldon Jacobson, MD 


**Delirium-Back to Our Case**

---

The patient was found to be using  
both Fentanyl patches and  
Oxycontin

She improved markedly with  
Narcan

The head CT was unchanged and  
her Ca<sup>++</sup> was 10.8

Sheldon Jacobson, MD 

**Questions?**