Y'ALL GONNA MAKE ME LOSE MY MIND: HOW TO APPROACH DELIRIUM IN THE HOSPITALIZED PATIENT

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MAYO CLINIC

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DISCLOSURES

- I have no relevant relationships with commercial interests to disclose.

- This presentation does discuss off-label uses of products.

OBJECTIVES

At the conclusion of this session, participants should be able to:

- Explain the lasting impact delirium has on patients and their families.
- Recognize the risk factors for developing delirium in the hospital.
- Recognize delirium in the hospitalized patient.
- Develop strategies for delirium prevention.

AUDIENCE RESPONSE

- The most effective screening tool used by clinicians for testing mental status is:

A. Memorial Delirium Assessment Scale
B. Kokman Mental Status Exam
C. Confusion Assessment Method (CAM)
D. Mini Mental State Exam (MMSE)

AUDIENCE RESPONSE

- The only symptom that both dementia and delirium have in common is:

A. Fluctuating symptoms over a 24-hour period
B. Progressive, insidious onset
C. Disturbance of consciousness
D. Memory impairment

AUDIENCE RESPONSE

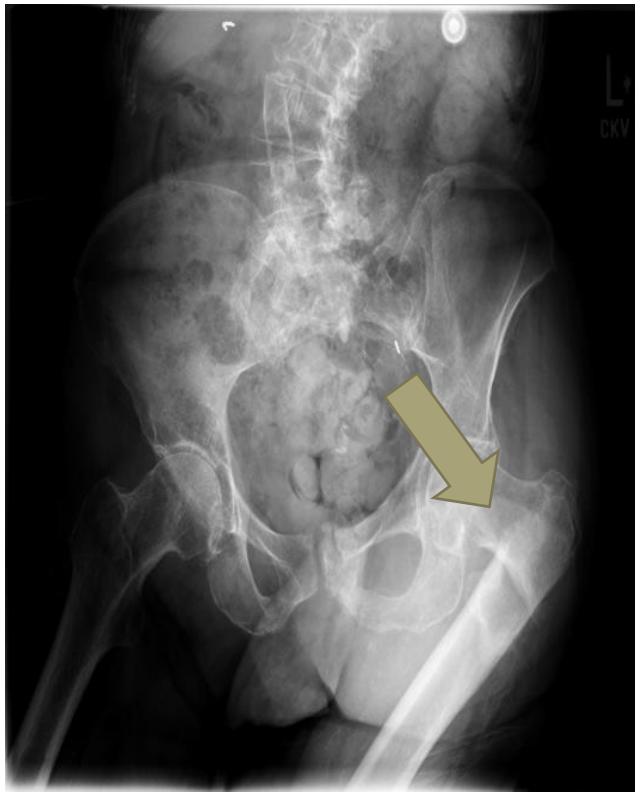
- What is the recognized title for dementia in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V)?

A. Encephalopathy
B. Neurocognitive disorder
C. Disturbed consciousness disorder
D. Cognitive dysfunction spectrum disorder

MR. BERGER

- Mr. Berger is an 82-year-old man with moderate Alzheimer's disease who is brought to the ED via EMS, accompanied by his daughters. They report that he tripped while walking in the kitchen and fell onto his left side. He is at his baseline mental status but is complaining of left hip pain. His x-ray reveals a left hip fracture. He will be admitted to the hospital for surgery pending your POE.

- What do you tell his daughters, who are at bedside?



WHAT HAPPENS TO HOSPITALIZED PATIENTS WITH DEMENTIA?

- Delirium
- Falls
- Placement of lines and catheters
- Pressure wounds
- Untreated pain
- Behavioral problems
- Restraints
- Placement of feeding tubes
- Functional decline

DEMENTIA VS. DELIRIUM

	Dementia	Delirium
Memory impairment	✓	✓
Disturbance of consciousness		✓
Acute, rapid onset		✓
Progressive, insidious onset	✓	
Fluctuation of symptoms during 24-hour period		✓

DSM-5 DELIRIUM DX CRITERIA

A. Disturbance in attention and awareness.

B. Disturbance develops over a short period of time (usually hours to days, represents a change from baseline, and tends to fluctuate in severity over the day.

C. Additional disturbance in cognition (memory, disorientation, language, visuospatial ability or perception).

D. Disturbances in A and C are not better explained by a preexisting, established, or evolving neurocognitive D/O and do not occur in setting of coma.

E. Evidence from H&P/labs that disturbance is a direct physiological consequence of another medical condition, intoxication/withdrawal, exposure to toxin, or multiple etiologies.

SPECTRUM OF DELIRIUM

- **Hyperactive** or agitated delirium — 25% of all cases
- **Hypoactive** delirium — ≥50% of all cases
    - Recognized less and often mistreated, which caries poorer prognosis
- **Mixed**

PREVALENCE OF DELIRIUM

- As many as 50% of older hospitalized patients experience delirium.
  - Patients with dementia are 3-5X more likely than cognitively intact older patients to develop delirium.
  - 2/3 of hospital delirium occurs in patients with dementia.

- Incidence ↑ (up to 70%) in ICU patients

- ↑ risk in patients with hip fractures, vascular surgery **and COVID-19**

MORBIDITY ASSOCIATED WITH DELIRIUM

- 10-fold risk of death in hospital
- 3-5-fold ↑ risk of nosocomial complications, prolonged stay, post-acute nursing home placement
- Poor functional recovery and ↑ risk of death up to 2 years following discharge
- Persistence of delirium → poor long-term outcomes

COST OF DELIRIUM

- $164 billion per year!

- How do we fix this?
  - Screening
  - Prevention

NEUROPATHOPHYSIOLOGY: INFLAMMATION

- Delirium associated with:
  - ↑ **C-reactive protein, ↑ interleukin-1β, and ↑ tumor necrosis factor**
- Especially important in postoperative, cancer and infected patients (sepsis)
- Inflammation can break down blood-brain barrier, allowing toxic substances and cytokines access to CNS

RISK FACTORS FOR DELIRIUM

Predisposing Factors

- **Dementia**, stroke, other
- Age
- Functional disability
- Multimorbidity
- Male gender
- Sensory impairment (↓ vision/hearing)

Precipitating Factors

- Polypharmacy
- Infection
- Dehydration
- Immobility

The more predisposing factors present, the fewer precipitating factors are required to cause delirium…

"ROUND UP THE USUAL SUSPECTS"

- ***Infections*** (esp. respiratory, urinary)
- ***Postoperative*****
- Acute cardiopulmonary event
- Neurologic event
- Drug intoxication or withdrawal
- Metabolic abnormality
- Urinary or fecal disorders
- Uncontrolled pain
- Restraints
- Reduced sensory input
- Severe anemia

MR. BERGER

- You see Mr. Berger the following morning. Unfortunately, his hip surgery has been delayed because of the current COVID-19 surge, but he is scheduled for repair tomorrow.

- He is more confused than when you saw him yesterday. He cannot tell you his name and does not recognize his daughter. He is pulling at his sheets.

- His daughter asks why he is declining?

EARLY RECOGNITION OF DELIRIUM

- Key to improving outcomes!
  - Replicated in multiple studies

- Protocols for screening high risk patient groups
  - Post cardiac surgery patients
  - Post hip fracture patients

- **Peak onset is on 2nd postoperative day**
  - Associated with postoperative pain & anemia, use of benzos & opioids (esp. meperidine)
  - Recommendation is to limit sedation & provide adequate analgesia

DIAGNOSING DELIRIUM

- *DSM-5* criteria is precise but difficult to apply

- Confusion Assessment Method (CAM)
  - Clinically more useful
  - >95% sensitivity and specificity

CONFUSION ASSESSMENT METHOD

- Screening tool to assess for delirium.

Assesses 4 features of delirium:
1. Acute onset and fluctuating course
2. Inattention
4. Disorganized thinking
5. Altered level of consciousness

- (+) CAM requires 1 & 2 AND either 3 or 4

CAM

- Sensitivity 94-100%
- Specificity 90-95%
- Takes less than 15 minutes to complete
- Most commonly used, most predictive of delirium
- Can be performed by non-clinician interviewers
- Long and short versions

Developed and validated by Sharon Inouye, MD, MPH

OTHER MENTAL STATUS TESTING

- Mini Mental State Exam (MMSE)
- Kokman Mental Status Exam
- Memorial Delirium Assessment Scale
- Delirium Rating Scale Revised-98
- Nursing Delirium Screening Scale

- All found to be less effective than CAM…

DIFFERENTIAL DIAGNOSIS

- Sundowning (pattern usually established)
- Nonconvulsive status epilepticus
- Dementia
- Primary psychiatric issue (depression, mania)
- Other primary neurologic condition (i.e., frontotemporal lesions)

EVALUATION OF DELIRIUM

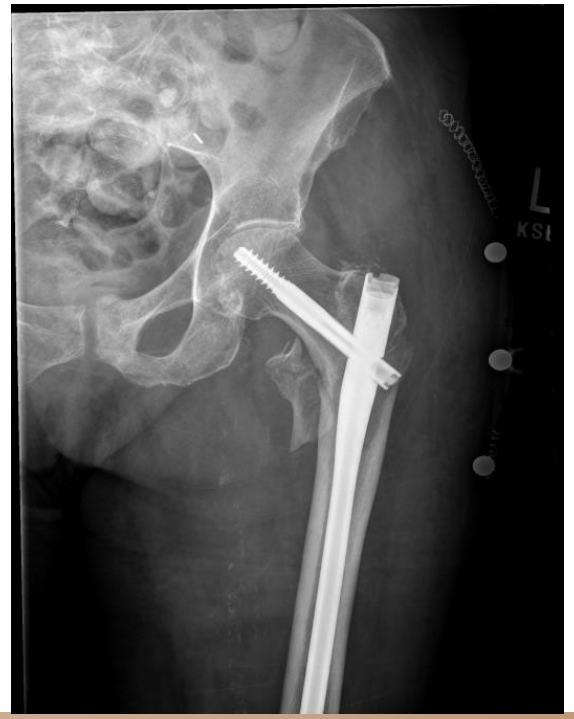
- Complete history and physical exam
- Details: onset, medication changes, other recent symptoms (cough, foul urine?)
- Review medications
- CBC w/diff, CMP, Ca^{2+}, Mg^{2+}, UA/UC
- ECG and CXR
- ABG?? (if hypercapnia suspected)

- If the cause is not clear after the initial work-up, consider:
  - Urine/blood tox screen
  - TSH, folate, B12, CSF
  - Head CT/MRI, LP, EEG
  - BCs
  - Bladder scan

MR. BERGER

- Mr. Berger is POD #1 after his hip repair. The covering night-time PA is called by his RN. She reports that he is more confused now vs. when she came on shift. He is yelling and is verbally abusive. He is trying to get out of bed and pull out his IV.

- His RN would like an order for something to help with his symptoms.



TREATMENT OF DELIRIUM

- **Prevention is the primary goal!**

- Identify and treat the underlying cause

- Consider environmental factors
  - Re-establish sleep-wake cycle
  - Mimic day/night environment
  - Reorienting devices/memory cues in hospital rooms
  - Family to bedside as allowable
  - Use hearing aides/glasses
  - RN de-escalating techniques
  - Sitter if needed for safety
  - Avoid physical restraints

- Reassure patient/family/staff

DOCUMENTATION AND CODING

- Use **"*encephalopathy*"** to describe a reversible alteration in mental status.
  - Toxic (drug)
  - Metabolic (lytes)
  - Type unclear

- ***"Altered mental status"*** is a non-specific symptom, and the resources utilized go unrecognized.

PHARMACOLOGIC TREATMENT

- There are NO approved medications!
- Avoid benzodiazepines (unless in EtOH withdrawal) and "sleepers!"
- Antipsychotics are often used off-label.
  - **Black box warning**

    "….conventional and atypical antipsychotics are associated with an increased risk of mortality in elderly patients treated for dementia-related psychosis…."

ANTIPSYCHOTICS

Orthostasis/Hypotension

QT Prolongation

- Haloperidol
- Risperidone
- Olanzapine
- Quetiapine
- Ziprasidone
- Aripiprazole

2nd Gen

Extrapyramidal side effects

Anticholinergic/ Sedating

Elevated glucose

APA PRACTICE GUIDELINES

- May 2016: The American Psychiatric Association released practice guidelines for antipsychotic medication use in patients with dementia

  - Non-emergency antipsychotic medication should only be used in patients with dementia when agitation and psychosis symptoms are severe, are dangerous and/or cause significant distress to the patient.
  - Response to non-drug interventions should be reviewed prior to use of antipsychotic medication.
  - Before treatment with an antipsychotic, the potential risks and benefits should be assessed by the physician and discussed with the patient and the patient's surrogate decision maker, with input from the family.
  - Treatment should be initiated at a low dose and eased up to the minimum effective dose.
  - If the patient experiences significant side effects, the risks and benefits should be reviewed to determine if the antipsychotic should be discontinued.

PHARMACOLOGIC TREATMENT

- Ask yourself…
  - Do the symptoms need drug treatment?
  - Is this medication really going to help the symptoms?
  - What are the potential side effects?
  - How long will I have to continue it?

USE OF HALOPERIDOL (OFF-LABEL)

- Tiny doses compared to labeled use
- Assess for akathisia and extrapyramidal effects
- Avoid in older patients with parkinsonism
- Monitor for QT interval prolongation, torsade de pointes, neuroleptic malignant syndrome
- Newer atypical antipsychotics are equally effective
- **INTENDED FOR SHORT-TERM USE!!!!**
- **FAMILY SHOULD BE PART OF THIS DECISION MAKING!!!!**
- Let's talk about quetiapine and dexmedetomidine (Precedex) for a minute!

MR. BERGER

- You see Mr. Berger the following morning. His daughter is at his bedside. She is upset that he had such a bad night and asks why you didn't do more to prevent this from happening?

PREVENTION OF DELIRIUM

- 30-40% of delirium can be prevented.

- Be aware of and modify risk factors.
  - Avoid offensive medications (if possible)
    - Opioids, anticholinergics, sedatives

  - Acetaminophen for pain

- Medication prevention? Let's talk about this for a minute!

PREVENTION - HALOPERIDOL

- Study (n=408) in Netherlands
- No change in delirium prevalence
- Secondary endpoints favorable
  - ↓ duration of delirium
  - ↓ severity
  - ↓ LOS
- No haloperidol side effects noted

American Geriatric Society Abstracts, 2003

PREVENTION - HALOPERIDOL

- Randomized placebo-controlled trial to determine if haloperidol prophylaxis affected post-op delirium in elderly patients requiring hip surgery
  - 212 patients (of 430 total) received 0.5 mg TID starting at admission and to 3 days post-op (+ proactive geriatric consultation)

- Conclusions
  - Did not change the risk of delirium (15.1% vs 16.5%)
  - ↓ duration (5.4 vs. 11.8 days) and severity of delirium
  - ↓ LOS
  - Well-tolerated with no side-effects

Kalisvaart, 2005

PREVENTION - RAMELTEON

- Randomized placebo-controlled trial to determine if ramelteon had preventive effects on delirium
  - Melatonin agonist
  - 33 patients (of 67 total) received 8 mg QHS X7 days

- Conclusions
  - ↓ risk of delirium (3% vs 32%)
  - ↑ time to development of delirium (6.94 vs. 5.74 days)
  - QHS ramelteon may protect against delirium in hospitalized elderly patients.
  - More studies needed but appears promising…

Hatta, 2014

PREVENTION - MELATONIN

- Statistical analysis plan for the Prophylactic Melatonin for Delirium in Intensive Care (ProMEDIC): a randomized controlled trial

- A total of 850 ICU patients have been randomized (1:1) to receive either melatonin (4 mg QHS) or placebo.
- Currently underway in Australia and New Zealand!

AUDIENCE RESPONSE

- Now that you're an expert, which of the following medications would you have discontinued from Mr. Berger's MAR when his delirium began?

A. Acetaminophen
B. Docusate
C. Hydromorphone
D. Melatonin

MR. BERGER

- Mr. Berger's medications were streamlined, his glasses and hearing aides were brought in from home and the nursing staff began giving him positive reinforcement and repeatedly orienting him to his environment. His lights were left on during the day and turned off at night. He was up in his bed with all meals. His family spent time with him according to the hospital COVID-19 visiting policy. He was eventually appropriate for discharge from the hospital and was discharged to a skilled nursing facility…

TAKE-HOME POINTS

- Delirium is common and associated with substantial morbidity for older patients.
- Delirium can be diagnosed with high sensitivity and specificity using the CAM.
- A thorough history, physical, and focused labs will lead to the underlying cause(s) of delirium.
- A careful medication review is mandatory; discontinue any likely to contribute to delirium, if possible
- The best treatment for delirium is **prevention!!!**

AUDIENCE RESPONSE

- Who's ready to be done for the day?

A. I am! Where's the hotel bar outdoor patio?

B. Nope! I'm a lifelong learner and I can't get enough!

THANK YOU!

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