Delirium in the Frail and Elderly

Tommie Farrell, MD
Associate Medical Director
Pathways Palliative and Supportive Care, Hendrick Hospice
Disclosures

• No Financial

• Examination Chair for the Hospice Medical Director Certification Board
  • I was not involved in the planning of this conference
  • No content of the examination will be discussed and I will be utilizing a standard lecture approved by the Association of Directors of Geriatric Academic Programs

• Off label use of anti-psychotics
Objectives

• Articulate the importance of recognizing, appropriately diagnosing and documenting delirium
• Diagnose Delirium correctly in your elderly patients
• Treat Delirium correctly first with preventative measures, then with non-pharmacologic measures and finally with correct use of medications
Case

- A 78 year old female has a history of chronic back pain, bipolar disorder, hypothyroidism and breast cancer with metastasis to the liver and rib cage. She has onset of increased rib cage and is admitted to an in-patient hospice unit for pain control. There are no sensory or motor abnormalities on her physical examination.
Case

- On the second day in-patient she becomes agitated and has increased pain and she is started on some Ativan. The agitation and pain increases and the patient is heard crying out that she wants to go home.
Case

• During team rounds with physician, nurse and social worker she alternates between being tearful and laughing. Her iv pump beeps occasionally and when it does she keeps picking up the call light / tv remote to talk on it as if it is a phone. When asked questions about her condition she is unable to give the type of cancer she has and on further inquiry she is unable to give the names of her children, her physician, or the locations she is currently at.
Case

• What is the cause of this women’s confusion?
• What factors are contributing to the confusion?
• What further information would you want to know about her?
• What would be the initial treatment plans?
Why should we care about delirium?

• Because it is:
  • Common
  • Associated with **high mortality**
  • Associated with **increased morbidity**
Incidence of delirium among the elderly is high

- Delirium is present in 1/3 of older patients presenting to the ER
- 1/3 of inpatients ≥70 y.o. in general medicine services
- Incidence ranges 5% to 52% after noncardiac surgery
  - Highest rates after hip fracture and aortic surgeries

Delirium: increased mortality

• One-year mortality: 35-40%

• Independent predictor of higher mortality up to 1 year after occurrence
  • Delirious vs. not delirious elderly medical inpatients: hazard ratio 2.11 (95% CI 1.18-3.77) for death at 1 year
  • Adjusted for dementia, comorbidity, clinical severity, APACHE II score, admitting service (med vs. geri), demographic variables

Delirium is associated with increased risk of:

- Functional decline
- New nursing home placement
- Persistent cognitive dysfunction:
  - Only 18-59% of hospitalized elders with complete resolution of delirium symptoms 6-12 months after hospital discharge
  - Caveat- Many subjects in these studies had preexisting cognitive impairment

Persistent delirium: associated with high mortality (Kiely DK et al. JAGS. 2009)

- **Setting:** Post-acute care (PAC) facility

- **Study Design:** Observational cohort study

- **Participants:** 412 patients with delirium at admission to the PAC

- **Results:**
  - Cumulative 1-year mortality = 39%
  - Persistent delirium vs. resolved delirium: Hazard ratio 2.9 (95% CI 1.9-4.4) for death at 1 year
  - Adjusted for age, sex, comorbidity, functional status, and dementia
Diagnosis: call it what it is…

- DELIRIUM: ICD-9 code 780.09
- NEW ICD-10 – F05 code for delirium due to known physiologic condition
  - You will need to provide the conditions that are contributing to the cause – dementia, post-operative, ICU admission, etc.

- ACUTE DELIRIUM: Complication/Comorbidity (CC) in the MS-DRG system
  - Affects payment to hospitals

- “Δ MS” or “mental status change”:
  - No code
  - Not a CC
Diagnosis: Confusion Assessment Method (CAM)


- (1) Acute change in mental status with a fluctuating course
- (2) Inattention

AND

- (3) Disorganized thinking
  OR

- (4) Altered level of consciousness

Sensitivity: 94-100%, Specificity: 90-95%
Delirium vs. dementia

Despite marked differences, several features are common in both delirium and dementia:

- Disorientation
- Memory impairment
- Hallucinations
- Sleep-wake cycle reversal
## Delirium vs. dementia

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Time Course</th>
<th>Distinguishing Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delirium</td>
<td>Acute onset, lasting days to weeks (though could be longer)</td>
<td>Impaired attention, Altered level of consciousness</td>
</tr>
<tr>
<td>Dementia</td>
<td>Progressively worsening, permanent</td>
<td>Unimpaired attention and level of consciousness until severe stages</td>
</tr>
</tbody>
</table>
Assume delirium until proven otherwise

- Delirium may be the only manifestation of life-threatening illness in the elderly patient
A model of delirium

A multifactorial syndrome that arises from an interrelationship between:

• Predisposing factors ➞ a patient’s underlying vulnerability

AND

• Precipitating factors ➞ noxious insults
Predisposing factors
(baseline underlying vulnerability)

• Baseline cognitive impairment
  • 2.5 fold increased risk of delirium in dementia patients
  • 25-31% of delirious patients have underlying dementia

• Medical comorbidities:
  • Any medical illness

• Visual impairment
• Hearing impairment
• Functional impairment
• Depression
• Advanced age
• History of ETOH abuse
• Male gender
Precipitating factors
(noxious insults)

• Medications
• Bed rest
• Indwelling bladder catheters
• Physical restraints
• Iatrogenic events
• Uncontrolled pain
• Fluid/electrolyte abnormalities

• Infections
• Medical illnesses
• Urinary retention and fecal impaction
• ETOH/drug withdrawal
• Environmental influences
Some drug classes associated with delirium

- Medications with **psychoactive effects**:  
  - 3.9-fold increased risk  
  - 2 or more meds: 4.5-fold
- **Sedative-hypnotics**: 3.0 to 11.7-fold
- **Narcotics**: 2.5 to 2.7-fold
- **Anticholinergic drugs**: 4.5 to 11.7-fold
- Anti-emetics, tricyclics, steroids, many others
- Risk of delirium increases as number of meds prescribed rises
Delirium prevention: It can be done

• Find patients with 1 to 4 of the following *predisposing* characteristics:
  • Visual impairment (worse than 20/70 corrected)
  • Severe illness
  • Cognitive impairment (MMSE<24/30)
  • High BUN/Cr ratio (>18)

**Prevention = good hospital care for the elderly patient**

(Inouye SK et al. NEJM. 1999;340:669-76)

<table>
<thead>
<tr>
<th>RISK FACTOR</th>
<th>INTERVENTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive impairment</td>
<td>Orientation protocol, cognitively stimulating activities 3x/day</td>
</tr>
<tr>
<td>Sleep deprivation</td>
<td>Non-pharmacologic protocol, noise reduction, schedule adjustments</td>
</tr>
<tr>
<td>Immobility</td>
<td>Ambulation or active ROM exercises; minimize equipment</td>
</tr>
<tr>
<td>Visual impairment</td>
<td>Glasses or magnifying lens, adaptive equipment</td>
</tr>
<tr>
<td>Hearing impairment</td>
<td>Portable amplifying devices, earwax disimpaction</td>
</tr>
<tr>
<td>Dehydration</td>
<td>Early recognition and volume repletion</td>
</tr>
</tbody>
</table>
A multicomponent intervention to prevent delirium

*(Inouye SK et al. NEJM. 1999;340:669-76)*

<table>
<thead>
<tr>
<th>Outcome (n=852)</th>
<th>Intervention group</th>
<th>Usual care group</th>
<th>Statistical analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; delirium episode</td>
<td>9.9%</td>
<td>15%</td>
<td>OR 0.60 95%CI 0.39-0.92</td>
</tr>
<tr>
<td>Total days of delirium</td>
<td>105</td>
<td>161</td>
<td>P=0.02</td>
</tr>
<tr>
<td># of delirium episodes</td>
<td>62</td>
<td>90</td>
<td>P=0.03</td>
</tr>
</tbody>
</table>
Keys to effective management

• Think before treat
  • What has changed? Is there something to discontinue before prescribing?
  • Educate the staff how to recognize early and not make worse
  • Educate family to support them through this tough development
  • Choose lab tests and imaging studies based on need, not reflex
  • Review medication list
Keys to effective management

• Steps to take
  • Is the patient or staff safety compromised?
    • If no, then think about non-pharmacologic approaches first
  • Is the patient psychotic with delusions or hallucinations
    • If no, then think about non-pharmacologic approaches first
    • If yes, then antipsychotics indicated
  • What is the context or big picture and prognosis?
    • Is this time to attempt to reverse or just support through
Always try non-pharmacologic measures

• Arrange for presence of family members
• Provide reorientation
• Provide visual and hearing aids
• Remove indwelling devices: i.e. Foley catheters
• Mobilize patient
• Provide a quiet environment with low-level lighting
• Arrange for uninterrupted sleep

*Non-pharmacologic measures may be all that are required in some cases of mild delirium*
Look for the reversible causes

• Easy / less invasive to check and intervene
  • Impaction / Distension / Retention
  • Infection
  • Hypoxia
Look for the reversible causes

• A bit harder to recognize and intervene
  • Pain
  • Dehydration
  • Hypercalcemia (hydrate, diuretics, bisphosphonates) or hyponatremia
  • Medications (previous list)
  • Sleep Deprivation
  • Hypoglycemia
Look for the reversible causes

- Tough to recognize / diagnosis or intervene
  - Change in renal / liver status
  - Change in environment
  - Metastasis or post-irradiation
  - Seizures
  - Hypothyroidism
However, there are some instances in which you must medicate...

- When patient is in immediate risk for harming himself or others (such as health care staff)

- When patient is threatening interruption of essential therapy
  - Ex. Attempting self-extubation from the ventilator
  - Ex. Trying to pull out central venous catheter

- If you decide to start with medications, you should still initiate non-pharmacologic interventions
Pharmacologic management

• **Typical Haloperidol regimen**
  - **Mild delirium**
    - Oral dose: 0.25-0.5 mg
    - IV/IM dose: 0.125-0.25 mg
  - **Severe delirium:** 0.5-1 mg IV/IM repeated q30 min until calm
    - Patient will likely need 2-5 mg total as a loading dose
    - Maintenance dose: 50% of loading dose divided BID
    - Sample regimen: 0.5-1 mg twice a day, decrease dose as patient’s agitation improves
Pharmacologic management

• Atypical antipsychotics are as effective as low-dose haloperidol in treating agitated delirium

  (Lonergan E et al. Cochrane Database Syst Rev. 2007 Apr 18; (2): CD05594)

Sample Regimens

• Olanzapine 2.5-5 mg once daily
• Risperidone 0.25-0.5 mg twice daily
• Quetiapine 25 mg twice daily (preferred choice)

(Inouye, SK. NEJM 2006; 354:1157-65)
What about Ativan (lorazepam)?

• Second line agent

• Reserve for:
  • Sedative and ETOH withdrawal
  • Parkinson’s Disease
  • Neuroleptic Malignant Syndrome
Avoid restraints

They are only a measure of last resorts
Take home points: delirium in the elderly

• A multifactorial syndrome: **predisposing vulnerability and precipitating insults**
• Delirium can be diagnosed with high sensitivity and specificity using the **CAM**
• **Prevention** should be our goal
• If delirium occurs, **treat the underlying causes**
• Always try **non-pharmacologic approaches**
• Use **low dose antipsychotics** in severe cases