Advanced Pharmacology: Polypharmacy and Delirium in the Older Adult

Erica Yates, MSN, RN, ACNS-BC, CRRN
Delirium

- Cognitive disturbance
- Acute disturbance of cerebral function
- Impaired ability to attend to environment
- Rapid onset
- Fluctuating course
- Multifactorial

Evidence-based Synthesis Program Center, 2011
Features of Delirium

- Disorientation
- Poor short term memory
- Altered level of consciousness
- Disturbance of sleep/wake cycle
- Hallucinations
- Delusions
- Psychomotor disturbance (hyper or hypo activity)

Moore & O’Keeffe, 1999
# Delirium Clinical Presentation

## Onset shortly after admission

<table>
<thead>
<tr>
<th>Hyperactive</th>
<th>Hypoactive</th>
<th>Mixed</th>
</tr>
</thead>
</table>
| • Increased psychomotor activity  
  • Rapid speech  
  • Irritability  
  • Restlessness  
  • Paranoia | • Lethargy  
  • Slowed speech  
  • Decreased alertness  
  • Apathy  
  • Too polite | Fluctuate between hyperactive and hypoactive states within the shift |

Variable, unpredictable course & may persist for several weeks after discharge
Predisposing Factors

- Dementia or other cognitive impairment
- Male gender
- Advanced age
- Medical illness
- Surgery
- Poor functional status
- Alcohol abuse
- Depression
- Dehydration
- Sensory impairment

Evidence-based Synthesis Program Center, 2011
Precipitating Factors

During hospitalization:

- Polypharmacy
- Malnutrition
- Physical restraints
- Bladder catheter
- Iatrogenic event
- Untreated pain
- Relocation especially to ICU

Evidence-based Synthesis Program Center, 2011
Precipitating Factors

- 66% of patients who experience delirium in the hospital have underlying cognitive impairment
- 45% of cognitively impaired older adults have been found to develop delirium

Britton & Russell, 2006
Delirium

- The prevalence of delirium in hospitalized patients is as high as 56%
- > 80% of ICU patients
- Associated mortality is 25-33%
- 30-90% of older adults leave hospital with unresolved delirium
- Rates of persistent delirium at discharge are 45%, 1 month 33%, 3 months 26%, and 6 months 21%

Evidence-based Synthesis Program Center, 2011
Adverse Outcomes of Delirium

- Psychological distress
- Prolonged Hospital Stay (LOS)
- Increased Costs of Hospitalization
- Increased Risk of Mortality
- Functional Decline
- Cognitive Decline
- Nursing Home Placement
Detection

• Listen to family/friends
• Know patient’s baseline cognitive status
• Use screening tools
  o Confusion Assessment Method (CAM)
  o Nursing Delirium Screening Scale (Nu – DESC)
Delirium Differential Diagnosis

- I - infection
- W – withdrawal
- A – acute metabolic disorder
- T - trauma
- C – CNS pathology
- H - hypoxia
- D - deficiencies
- E – endocrine issues
- A – acute vascular issue
- **T – toxins**
- H – heavy metals
Polypharmacy

The use of multiple medications or the use of a medication that is not indicated

About 61% of older adults experience polypharmacy during hospitalization

Adverse Drug Reactions

- Falls
- Delirium
- Dizziness
- Frailty
- Incontinence
- Syncope
- Sleep disorders
- Pressure ulcers
Drugs and Delirium

- Interfere with neurotransmitter function
- Interfere with supply/use of substrates for metabolism

- Cholinergic pathways
  - Regulate attention, memory & sleep

- Serotonin, noradrenalin, dopamine, & GABA

Moore & O’Keeffe, 1999
Drugs and Delirium

• How do we know what caused the delirium?
  o Administration precedes confusion by hours or days
  o Withdrawal leads to return to baseline
  o Reintroduction leads to recurrence of confusion
Drugs and Delirium

- Drugs reported as cause of delirium in 12 - 39% of delirium cases in older adults
- Toxicity can play a role in older adults
- Addition of 3 or more medications during hospitalization associated with increased risk of delirium

Catic, 2011
Pharmacokinetic Alterations in the Older Adult

- Poor absorption
- Altered distribution
- Altered metabolism
- Altered excretion
High Risk Drug Classes

- A – antiparkinsonian drugs
- C – corticosteroids
- U – urinary incontinence drugs
- T – theophylline
- E – emptying drugs
- C – cardiovascular drugs
- H – H2 blockers
- A – antimicrobials
- N – NSAIDs
- G – geropsychiatry drugs
- E – ENT drugs
- I – insomnia drugs
- N – narcotics
- M – muscle relaxants
- S – seizure drugs
Anticholinergic Drugs

• Medications of risk:
  o All medications with anticholinergic properties

• Recommendations:
  o Use judiciously
  o Educate patient and family
  o Monitor patient closely

Catic, 2011 & Moore & O’Keefe, 1999
Analgesics

- Pain versus analgesics:
  - Undertreated pain and analgesic use associated with delirium

Catic, 2011
Analgesics

• Medications of risk:
  o Meperidine
  o NSAIDs

• Recommendations:
  o Use alternative medication
  o Start low & go slow
  o Scheduled doses versus PRN

• Alternatives:
  o Acetaminophen
  o Oxycodone

Moore & O'Keefe, 1999
Benzodiazepines

• Medications of risk:
  o Long acting (diazepam)
  o High doses

• Recommendations:
  o Use short acting agent for anxiety & withdrawal
  o Use low dose antipsychotic for agitation & psychosis

• Alternatives:
  o Lorazepam (for withdrawal)
  o Haloperidol
  o Risperidone

Catic, 2011
Antihistamines

- Medications of risk:
  - Diphenhydramine
  - Hydroxyzine

- Recommendations:
  - Avoid use as hypnotic or opioid adjunct
  - Use lowest effective dose for acute allergic reaction
  - Use non-sedating form for seasonal allergy

- Alternatives:
  - Loratadine
  - Fexofenadine

Carpenter, 2011
Antiemetics

- Medications of risk:
  - Promethazine
  - Prochlorperazine
  - Trimethobenzamide

- Recommendations:
  - Use lowest effective dose
  - Avoid use as opioid adjunct

- Alternatives:
  - Ondansetron

Carpenter, 2011
Cardiovascular Drugs

Antihypertensives

- Medications of risk:
  - Clonidine
  - Methyldopa
  - Beta Blockers (propanolol)

- Recommendations:
  - Avoid use

Carpenter, 2011
Cardiovascular Drugs

Diuretics

• Recommendations:
  o Use judiciously

Carpenter, 2011
Cardiovascular Drugs

Antiarrhythmics

• Medications of risk:
  o Digoxin

• Recommendations:
  o Use judiciously
  o Monitor patient frequently

Carpenter, 2011
Nonpharmacologic Interventions

• Prevention is best
  o Assess patients on admission for vulnerability (or prior to admission for surgical patients)
  o Put interventions in place prior to signs & symptoms of delirium
Nonpharmacologic Interventions

- Promote Sleep
- Orientation
- Mobilization
- Avoid Sensory Deprivation
- Avoid dehydration
- Adequate Pain Management
- Avoid tethers
- Avoid known precipitants (medications, hypoxia)

Catic, 2011
# Pharmacologic Treatment

<table>
<thead>
<tr>
<th>Use of psychotropic drugs</th>
<th>Priority</th>
<th>Common mistakes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Complicates cognitive assessment</td>
<td>• Symptoms threaten their own safety or the safety of others</td>
<td>• Use of benzodiazepines</td>
</tr>
<tr>
<td>• Can impair patient’s ability to understand and therefore cooperate with treatment</td>
<td>• Symptoms would result in the interruption of essential therapy</td>
<td>• Use of antipsychotic medications in excessive doses or administered too late</td>
</tr>
<tr>
<td>• Associated with greater risk of falls in the elderly</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Haloperidol

- Limited respiratory depression and hemodynamic effects
- Mild sedation
- Initial doses 1-2 mg Q2-4H PRN (0.25-0.5 mg Q4H in older adult)
- ICU: 0.5-10 mg IV depending on degree of agitation
- Repeat Q15-30 min with sequential doubling of the dose
- When calm administer 25% of last bolus dose over 6 hours
- Taper over several days after patient controlled
- Maximum daily dose not clear: 18 mg daily for IM/IV and 30 mg for PO
Haloperidol

• Check EKG, potassium and magnesium,
  o Requires telemetry monitoring

• Adverse effects:
  o QTc prolongation: caution if > 440 ms (men) and > 470 ms (women), must not be used if >500 ms
  o Torsades de pointes (higher risk with IV use and dose ≥ 35 mg in 6 h),
  o Akathisia, EPS (lower incidence with IV use)

Grover, Mattoo, & Gupta, 2011
Atypical antipsychotics

• For patients requiring higher doses of haloperidol or having a high potential for extrapyramidal symptoms (EPS) or cardiac side effects
• Risperidone, Olanzapine, Quetiapine, Aripiprazole
Atypical antipsychotics

Risperidone

- As efficacious and leading to fewer side effects compared to haloperidol with comparable mortality rate
- Best clinical response by day 4 or 5
- Required fewer rescue medications
- Main adverse effects: sedation, nausea and mild parkinsonism
- 0.5 mg PO QHS

Grover, Mattoo, & Gupta, 2011
Atypical antipsychotics

Olanzapine

• Better than placebo and as efficacious as haloperidol
• Poorer response in one study associated with >70 y/o, dementia, hypoactive, severe, and CNS spread of cancer and hypoxia as etiologies
• Can be given IM, but requires to be separated from injectable benzodiazepines by 1 hour
• Strong antihistaminergic activity
• 5 mg/d for up to 5 days

Grover, Mattoo, & Gupta, 2011
Atypical antipsychotics

Quetiapine

- Reported to be better tolerated and as efficacious as haloperidol, and better than placebo
- Following traumatic brain injury may be the drug of choice
- Patients with Parkinsonism
- Strong antihistaminergic activity
- PO only
- 50 mg BID and increase as needed by increments of 50 mg BID, maximum 400 mg/d

Grover, Mattoo, & Gupta, 2011
Atypical antipsychotics

Aripiprazole

- Less sedating properties $\rightarrow$ ? hypoactive delirium
- ?QTc prolongation
- 2.5 mg-5 mg PO BID
- IM 9.75 mg, can repeat at intervals $\geq$ 2H, don’t exceed 30 mg in 24 h

Grover, Mattoo, & Gupta, 2011
General Principles

- Use one drug at a time
- Keep the use of sedatives and antipsychotics to a minimum
- Use lower doses in older adults
- Titrate dose to effect
- Increase scheduled doses if ‘as needed’ doses are required
- All medications should be reviewed at least every 24 hours
- Medications usually discontinued 7–10 days after symptoms resolve
Rules of Prescribing for Older Adults

• Start with a low dose
• Titrate the dose slowly as needed
• Avoid starting more than one drug at once
• Review all medications on a regular basis
• Provide written instructions and ensure patient understands
• Avoid using one medication to treat the side effects of another
Tools for Prescribing to Older Adults

- Beers Criteria
- Screening Tool of Older People’s Potentially Inappropriate Prescriptions (STOPP) and Screening Tool to Alert Doctors to the Right Treatment (START) criteria
- Drug Burden Index (DBI)
Questions?


References


