Prevention and Management of Acute Delirium

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Disclosures

• Financial disclosure: none

• Off label indications: antipsychotics for management of delirium

WHAT IS DELIRIUM?
CLINICAL MANIFESTATIONS

Acute onset and fluctuating course of:

- Disturbances in Cognition:
  - Memory deficit
  - Language deficit
  - Disorientation
  - Perceptual disturbances
  - Emotional disturbances

- Disturbances in Consciousness:
  - Altered level of consciousness
  - Inattention
  - Psychomotor disturbances
  - Disorganized thinking
  - Altered sleep-wake cycle

DISTURBANCE of CONSCIOUSNESS

<table>
<thead>
<tr>
<th>Hypoactive (75%)</th>
<th>Hyperactive/Agitated (25%)</th>
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<tbody>
<tr>
<td>reduced motor activity with lethargy</td>
<td>increased motor activity with agitation, hallucinations, and inappropriate behavior</td>
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Mixed elements of hypoactive and hyper/agitated delirium

DELIRIUM IS COMMON

- Affects 15-60% of hospitalized patients over age 65
  - 70-80% in intensive care
  - 83% at the end-of-life
  - 37% of postoperative patients

DELIRIUM IS HIGH IMPACT

- Associated with high morbidity and mortality
- Increased LOS by 5 days/patient
- Directs costs to Medicare of $6.9 billion/year
What is the next best step to prevent delirium?

92 yo female w/ DAT, admitted for CAP
Exam: 99.5F, 131/69, 85, 15, 95% on 2L O2; Foley
Meds: donepezil 10 qd, ativan 0.5 mg tid, oxybutinin,

A) It cannot be prevented
B) Multicomponent intervention including neck massages
C) Haloperidol 0.5 mg po TID while hospitalized
D) Assign a sitter

Step # 1
ASSESS RISK
HOW IN-HOSPITAL DELIRIUM OCCURS

HIGH RISK PATIENT

• Demographics - Age
• Cognitive Impairment
• Medical Comorbidity
• Decreased Oral Intake/dehydration
• Functional Impairment
• Sensory Impairments
• Number of Drugs

HIGH RISK SITUATION

• Acute Intercurrent Illnesses/AMI
• Injury
• Neurologic Disease
• Surgery
• Infection
• Pain
• Medication additions
• Weight loss
HIGH RISK ENVIRONMENT
• Unfamiliar Environment
• Indwelling Bladder Catheter
• Immobility
• Sleep deprivation
• Sensory deprivation
  – (dark or noisy)
• Isolation

MEDICATIONS ASSOCIATED WITH DELIRIUM
• Sedative-hypnotics
• Narcotics
• Anticholinergics
• Cardiac medications
• Antihypertensive medications
• Other
  – Misc: steroids, H2 blockers, NSAIDs
  – Polypharmacy
  – Alcohol or drug withdrawal

INSTITUTE PREVENTIVE MEASURES

Step # 2
Yale Delirium Prevention Protocol/Hospital Elder Life Program
SK Inouye et al. NEJM 1999;340:669

### Modifiable risk factor → Prospective Intervention

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Intervention</th>
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<tbody>
<tr>
<td>Cognitive impairment</td>
<td>Orienting communication</td>
</tr>
<tr>
<td>Immobility</td>
<td>Early mobilization, reduce restraints</td>
</tr>
<tr>
<td>Visual Impairment</td>
<td>Visual aids, adaptive equip</td>
</tr>
<tr>
<td>Hearing Impairment</td>
<td>Amplifiers, adaptive equip</td>
</tr>
<tr>
<td>Dehydration</td>
<td>Prevent and correct dehydration</td>
</tr>
<tr>
<td>Sleep deprivation</td>
<td>Uninterrupted sleep, nonpharmacologic aides</td>
</tr>
</tbody>
</table>

HELP INTERVENTION: Delirium Can Be Prevented

- **Delirium rates:** 10% intervention group, 15% control group (OR 0.60, 95% CI = 0.39-0.92)
- **Reduced:** total delirium days and episodes
- **Savings:** $831 per intermediate risk patient; savings not shown for highest risk patients

STRUCTURED GERIATRIC CONSULTATION FOR POSTOPERATIVE DELIRIUM

- CNS O2 delivery
- Fluid/electrolyte balance
- Treatment of pain
- Eliminate unnecessary medications
- Regulate bowels/bladder
- Insure adequate nutrition
- Early mobilization
- Prevent, detect and treat post op complications
- Environmental Stimuli
- Treat agitated delirium
STRUCTURED GERIATRICS
CONSULTATION

• Delirium rates: in 32% of intervention patients versus 50% in usual care (p = 0.04)
• Reduced: severe delirium cases by > 50%
• Other: No difference in LOS

NNT to prevent one case of delirium
= 5.6 patients

Can haloperidol prevent delirium?

• Best evidence: Kalisvaart. JAGS. 2005;53:1658-66
  – single institution RCT hip fracture patients
  – 0.5 mg po TID admission to POD 3
• Bottom line
  – shorter duration (5.4 v. 11.9 d), LOS (17.1 v. 22.6 d)
  – reduced severity
  – little effect on incidence (15.1% v. 16.5%)
  – no major side effects at this dose
• Extrapyramidal side effects at doses >4.5 mg/d

AN OUNCE OF PREVENTION…

• Yale Delirium Prevention Protocol/Hospital Elder Life Program SK Inouye et al. NEJM 1999;340:669
  – Once delirium was present, there was no effect on severity or recurrence
• Pharmacologic treatment may worsen mental status and prolong course
What is the next best step to treat agitated delirium?

A) Haldol 5 mg IM x 1, observe for sedation
B) Haldol 0.5 mg PO q30 min until calm, divide total dose over 24 hrs and taper over 3 days.
C) Lorazepam 1 mg po BID
D) Non-pharmacologic measures

DELIRIUM:
A TYPICAL GERIATRIC SYNDROME

Multiple Morbid Processes   Single Manifestation

- Dementia
- Hearing loss
- Comorbid disease
- Acute illness
- Dehydration
- Multiple medications
- Disturbed sleep

Step #1: Identify and address (multiple) predisposing and precipitating factors

- History (dementia, surgery, pain)
- Physical examination
- Basic labs
- Infectious work up
- Medication review
Step 2: Provide supportive care and prevent complications

- Protect airway
- Maintain volume
- Nutrition
- Skin care
- Mobilize
- Prevent VTE

Step 3: Manage Symptoms

- Prevention measures (such as HELP)
- Reorientation
- Sitters
- Avoid/reduce tethers
- Normalize sleep-wake cycle
- Pharmacologic management

PHARMACOLOGIC MANAGEMENT

Only two indications:

1. severe agitation interfering with care
2. danger to self or others
PHARMACOLOGIC MANAGEMENT

Treatment algorithm using Haldol:
1. Load 0.5 – 1.0 mg IM q 30 minutes until manageable
2. Maximum dose for naïve patients:
   1. 5 mg in a 24 hour period
   2. 90% of receptors are occupied
3. After 24 hrs, use _ of loading dose in divided doses.
4. Taper beginning day 2 or 3 over several days.

ATYPICAL ANTIPSYCHOTICS

- Respiridone and olanzapine equivalent in efficacy to low dose halperidol
- Quetiapine not studied
- Atypical antipsychotics have been associated with increased mortality in dementia; implications for delirium Rx not understood

ORAL ANTIPSYCHOTIC DOSING

- Haldol
  – 0.5 – 1.0 mg PO BID and prn q 4h.
- Risperidone
  – 0.5 mg po BID
- Olanzapine
  – 2.5-5.0 mg po qd
- Quetiapine
  – 25 mg po BID
LIMITED ROLE OF BENZODIAZEPINES

- May result in longer more severe course. (Breitbart W. Am J Psychiatry. 1996; 153: 231-7)
- Indications:
  - alcohol withdrawal
  - neuroleptic malignant syndrome
  - Parkinson’s disease

Summary

- Answers:
  Scenario 1: b. multicomponent intervention
  Scenario 2: b. haloperidol until calm, then divide dose over next 24 hrs and taper.

Thank you!