Confusion in the Post-operative Patient

Surgeon or Shrink Problem?

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Outline

Confusion/Delirium

Definition
Clinical importance/epidemiology
Pathogenesis
Clinical Features
Assessment

Etiology
Predisposing factors
Assessment / Management
Confusion

**Definition**

Inability to maintain a coherent sequence of thoughts, accompanied usually by inattention and disorientation.

**Synonymous with Delirium***

*Psychiatry and Neurology interpret terms differently*
Postoperative Confusion

Why is it important?

One of the most common postoperative complications

- Incidence ~ 37% but highly variable

Increased morbidity and mortality

- Higher post-op complication rates
- Delayed functional recovery
  - Increased length of stay
- Mortality doubled c/w patients w/o delirium
Pathogenesis of Delirium

Biochemical and Electrophysiologic Derangement

Several theories

- **Cholinergic pathways play a significant role**
  - ↑ anticholinergic activity correlates with severity of delirium
- Serotonin
  - Elevated in hepatic encephalopathy, sepsis
- ↓ Substrates for oxidative metabolism (O2, Glucose)
- ↑ Cytokines
- Ionic transmembrane transport disturbances

Multifactorial!!!
Presentation of Delirium

Hyperactive
The “confused, uncooperative, agitated patient”
Frequently recognized but misdiagnosed

Hypoactive
The “quiet, withdrawn, easy to manage but drowsy patient”
Frequently missed
Clinical Features of Delirium

**Acute onset and fluctuating course**

_Nursing/family: “Mr. X was confused and couldn’t sleep again last night...wasn’t like it before OR”_

- Onset may be hours to days with diurnal changes
- Typically worse at night “Sundowning”
  - Excess stimulation and disruption of sleep wake cycle

**Inattention**

- Easily distracted. Unable to maintain or shift attention
- May be related to perceptual changes (hallucinations, illusions)
Clinical Features of Delirium

Disorganized thinking/Cognitive changes

*Sure he’s from Fortune but he’s all over the place*

- Memory loss, disorientation, language problems
- Mistakes the unfamiliar for the familiar

Altered level of consciousness

- Alert (normal)
- Vigilant (hyperactive/alert/anxious)
- Lethargic (drowsy, easily aroused)
- Stupor (difficulty to arouse)
- Coma (unarousable)
Assessment for Delirium

**Mini-Mental Status (Folstein’s) Exam**
- Age and education adjusted
- 87% sensitivity
- 82% specificity

**Confusion Assessment Method Diagnostic Algorithm**
- Acute onset and fluctuating course + Inattention
- & Disorganized thinking or Altered level of consciousness
- 94-100% sensitivity
- 90-95% specificity

**Delirium Writing Test**
- Reluctance to write
- Motor impairment (tremor, clumsy, micrographia)
- Spatial disorders
Causes of Delirium

Delirium is a medical condition, and a potential emergency!

“I Watch Death”

Infectious: Sepsis, CNS infections
Withdrawal: EtOH, sedative hypnotics, barbiturates
Acute Metabolic: Dehydration
  Acid-base disorders
  Electrolyte disturbance etc.
  - \( \uparrow \downarrow \) Na, \( \uparrow \) Ca/Phosphate, \( \uparrow \downarrow \) Glu, Hepatic/Renal dz
Trauma: Burns, Head injuries
CNS Disease: CVA (ischemic/hemorrhagic), Seizures, Tumour, Vasculitis
Hypoxia: MI, CHF, PE, Pneumonia, COPD
Causes of Delirium

“I Watch Death”

Deficiencies: B12, niacin, thiamine, folate etc. (Malnourished)

Environmental: ↑ or ↓ Temperature, Endocrinopathies (thyroid, diabetes, adrenal)

Acute Vascular: Hypertensive emergency, SAH

Toxins/Drugs: Substances of abuse, medications, carbon monoxide

Heavy Metals: Lead, Mercury
Predisposing Factors

Preoperative

Age !!!
- 20% of post-op delirium occurs in the elderly
- Elderly: Pre-existing dementia/decreased cognitive ability
  Polypharmacy and ↓ ability to metabolize drugs
  Visual/hearing impairment
  Higher incidence of COPD, CAD, Cerebrovascular dz.

Underlying brain disease (CVA, Seizures, Dementia)

Psychiatric illness: Especially depression
Predisposing Factors

Preoperative

Comorbid Illness: CHF, CAD, CRF, Liver disease, COPD, DM
Higher post-op complications

Medications:

Anticholinergics: TCA’s, neuroleptics, antihistamines, benztropine

Opioids: Morphine, codeine, demerol

Benzodiazepines: Diazepam, ativan etc.

Antiparkinsonian agents: Levodopa, amantadine, bromocriptine

H2-receptor blockers: Ranitidine, famotidine etc.
Predisposing Factors

Preoperative

Medications (cont’d):

*Cardiovascular Rx*: B-blockers, Digoxin, Diuretics, Ca-channel blockers

*Antibiotics*: Penicillin, cephalosporins, gentamicin

*Anticonvulsants*: Dilantin, Carbamazapine

*Anti-inflammatory agents*: Steroids, NSAIDS, Cyclosporine

*Oral hypoglycemics*: Glyburide, glipizide
Predisposing Factors

Intra-operative

Surgery Details:
Anesthesia time and type (No difference between General vs regional)

Intraop complications (perfusion related sequelae)

Surgery type
Cardiac: (hypoperfusion, microemboli formation, cerebral ischemia)

Orthopedic: Femoral neck #’s (? Fat emboli)

Ophthalmologic: vision loss, use of anticholinergic Rx
Predisposing Factors

**Post-operative**

Environment:
- Unfamiliar surroundings
- Sensory overload: “ICU psychosis”

Medications: Addition and discontinuation/holding Rx
- Antiemetics
- Analgesic vs. inadequate pain control
- Antibiotics
- Inotropes
Management

1. Prevention:
   - Preoperative optimization of comorbidities (Medical consult/liaison)
   - Eliminating Rx that can predispose to delirium
   - Optimizing fluid status
   - Aggressively treating pain
   - Promoting early ambulation
   - Familiar, tranquil postoperative care settings

Study: Elderly patients with hip fracture
   - Interventions: medical evaluation, anticoagulation protocol, O2 administration, expeditious surgery
   - ↓ incidence of delirium: 61.3% to 47.6%
Management

2. Identification and Treatment of underlying disorder
   May be multifactorial
   History and Physical!!!!
       Identify risk factors/potential post-op complications
       Vitals, Fluid status, S/Sx Infection and focal neuro deficits

Ancillary tests/investigations:
   CBC, LBC
   Pulse oximetry +/- ABG
   Septic w/u
   EKG
3. Supportive care
   Delirium frequently persists despite medical management
   OR
   No identifiable cause

   **Common non-Rx approaches**
   Frequent reorientation/reassurance (verbal/visual)
     - Staff/family, clocks, calendars
   Glasses, hearing aids
   Room lighting: Mimic day-night cycle
   Early ambulation
The Agitated/Violent Patient

The Delirious patient may resist/refuse assessment and threaten the safety of his/herself or others.

What do you do!

1) Trial of non-pharmacologic/supportive care
   Restraints ill advised (may increase risk of injury or worsen agitation)

If fails….Get HELP!
The Agitated/Violent Patient

Role of Pharmacologic Management
- Prevention of injury (self/others)
- Allows further evaluation and treatment

Neuroleptics vs. Benzodiazepines

Neuroleptics (Haldol, Risperdone, Olanzapine, Seroquel)
  Agitation and psychotic behaviour
  Minimal hemodynamic and respiration side effects
  NOT 1st line for EtOH/Sedative hypnotic withdrawal
  Effective/easy routes of delivery
    Haldol (IV, IM, po)
    Olanzapine (Zydis on peanut butter)
  Non-classicals: Better side effect profile
The Agitated Patient

Neuroleptics (cont’d)

Dosing:
Adjust for age and potential side effects
Start low and titrate to desired effect

Haldol 2-10mg IV (0.5 – 2mg in elderly)
Zydis 5mg
Risperdal 0.25 – 1mg
Seroquel 12.5 – 25 mg
Benzodiazepines

Drugs of choice in EtOH and sedative withdrawal syndromes
Useful adjunct to neuroleptics (↓ Extrapyramidal symptoms)
Quicker onset than neuroleptics
Beware: oversedation, hypotension, respiratory depression

Dosing:
Ativan 1-2mg IV equivalent to 2-4 mg po
Symptom triggered schedule preferred to fixed dose schedule in withdrawal syndromes (CIWA-Ar)
  - shorter periods of sedation
  - less drug received
  - reduced length of stay
Case 1

60 y.o. male POD#1 distal gastrectomy for gastric ca.
PMHx: HTN, ↑Chol, PVD with aortobifemoral graft
IMC calls at 0200h: Mr. X is talking gibberish and can’t get to sleep. Can we order him something?

Does he have delirium?
How would you assess/manage the situation?
Case 2

69 yo male POD#3 Right fem-tib bypass. PMHx IHD, HTN, ↑Chol, PVD, COPD on Home O2 qpm. 5 East calls at 0300h. “Mr. Y won’t keep his O2 on, wandering and just tried to strangle a copatient with O2 tubing. Did you know he’s a drinker?”

Does he have delirium?
How would you assess/manage the situation?