The Operative Setting: a unique opportunity for delirium prediction and prevention

Monidipa Dasgupta, MD, MSc, FRCP(C),
University of Western Ontario, London, Ontario
Objectives

• Briefly highlight why this matters

• Review risk factors/scales for peri-operative delirium from 3 periods:
  • pre-operative, operative & post-operative periods

• Review management options
Why bother thinking about delirium?

- One of the most common peri-operative complications:
  - Rates depend on the procedure (major procedures, requiring in-patient hospitalization: 25 ->50%)

- Difficult to care for:
  - increased risk of complications (e.g. blood loss, infection, renal failure)
  - prolonged intubation and ICU stays
  - pressure ulcers, poor nutrition (e.g. hypoactive forms)
  - Can be disruptive to care- behavioural aspects (e.g. hyperactive forms)
Why bother thinking about delirium?

- Costly to care for
- Associated with longer length of stay, functional decline, institutionalization and death, independent of other variables
- Patients fear post-operative neurologic complications (brain damage or memory loss)
- Reports of Post Traumatic Stress Disorder after delirium, cognitive impairment and lower quality of life
Unique Opportunities of the operative setting

- Elective operations- typically patients are screened and prepared for surgery, prior to admission
  - A *golden opportunity* for risk assessment, which may affect decision about whether to have surgery (informed decision making)
  - Risk can be predicted, and preventive measures considered ahead of time- very conducive to PROACTIVE approach

*HealthAchieve*
Unique Opportunities of the operative setting

• Three distinct periods to consider:
  • pre-operative (patient baseline risk)
  • operative period
  • post-operative period

• Requires a truly multidisciplinary- team approach-
  • nursing, PT and other allied health professionals
  • internists/geriatric practioners, anesthesiologists, ICU staff, and surgeons
• Differing inherent risks for delirium

• Risk factor scales have been developed & tested-
  
• e.g non-cardiac surgery- **cognitive impairment**, advanced age, impaired physical function, alcohol use, abnormal lab values (& surgery type: aortic, thoracic)
  
• e.g Rudolph risk score (cardiac surgery): **cognitive dysfunction**, depressive symptoms, history of TIA/CVA, low albumin
  
• Other scales (Inouye et al.)- **cognitive impairment**, visual impairment, dehydration, severe illness
Risk assessment (preoperative period)

- Frailty measures also associated with increased delirium risk

- Multiple consistent risk factors across studies
  - *Pre-operative cognitive status*- shown repeatedly to increase risk for delirium in cardiac and non-cardiac procedures (should be routinely measured)
  - Other important factors as well: depressive symptoms (or other psychopathology), preoperative psychotropic drug use, medical co-morbidity, functional dependence, sensory impairment, prior history of post-op delirium, older age, institutional residence
Risk assessment (operative period)

- Delirium risk depends on the procedure:
  - Hip fractures (> 50%) and other emergency OR
  - Vascular (AAA, PVD) and thoracic procedures: also high rates (30-50%)
  - Other moderate risk procedures (e.g. non valvular cardiac surgery, elective orthopedic: 20-30%)
  - Also in low-risk procedures (TURP- 7-9%, cataract- 1-4%)

- Higher risk in longer procedures, and if excessive blood loss
Other operative/post-operative Factors

- Hypotension
- Maintaining cerebral perfusion pressures & oxygenation
- Depth of sedation
- Choice of anesthetics- some sedating drugs may be better (e.g. α2 agonist, Dexmedetomidine or precept) than others (benzodiazepines)
- Post-operative factors- immobility, medical complications, other care related factors (IV’s, Foley catheters), pain control (e.g. nerve blockade)
What can be done?

- **PREDICT, ANTICIPATE & PREVENT**-

  - Measure & document baseline cognition routinely & other risk factors as part of the pre-operative assessment

  - Start early, even in the pre-operative/acute emergency/ambulance setting, with good geriatric practices
What can be done?

• Pro-active multi-disciplinary geriatric approach:
  • mobilize
  • prevent dehydration/avoid constipation/ malnutrition
  • maintain oxygenation
  • address sensory deprivation
  • avoid foley catheters/ restraints if possible
  • re-orientation, cognitive stimulation
  • good pain control
  • avoiding unnecessary sedating drugs
  • minimize sleep disruptions
What can be done?

- Modified Hospital Elder Life Program (HELP) or other multidisciplinary geriatric programs:
  - Effective in studies of surgical patients (less delirium, fewer in-hospital complications), and possibly for longer term functional outcomes
Other potentially modifiable factors

- Consider anesthetic issues- depth of sedation, alternatives to benzodiazepines (e.g. α2 agonist, dexmedetomidine)
- Role of other agents (neuroleptics)
Conclusions

• Peri-operative delirium is very common (rates depend on the procedure), and is associated with **BOTH** short and long-term adverse consequences

• Multi-disciplinary geriatric programs can prevent delirium in the surgical setting

• Prevention implies **active screening** for delirium risk ahead of time

• Many tools exist to screen for delirium risk - check cognition

• On-going research – possible novel anesthetic approaches

*HealthAchieve*
References

- **Long-term psychiatric and cognitive consequences of delirium:**

- **Delirium Risk Factors:**
• **Frailty as a risk factor for delirium:**

  Leung JM, Tsai TL, Sands LP. Preoperative frailty in older surgical patients is associated with early postoperative delirium. Anesth Analg 2011; 112: 1199-201


• **Demedetomidine:**

• **Lighter sedation:**

Multi-disciplinary geriatric programs in surgical settings:

• Stenvall M, Berggren M, Lundstrom M et al. A multidisciplinary intervention program improved the outcome after hip fracture for people with dementia- subgroup analysis of a randomized controlled trial. Arch Gerontol Geriatr 2012; 54: e284-e289


