Delirium Management in a Medical and Surgical ICU

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Background

- Incidence of delirium in the ICU ranges from 45% to 87%
- May be higher in mechanically ventilated patients
- Delirium is associated with increased mortality, greater length of hospital stay and reduced functional ability
- Intensive Care Delirium Screening Checklist (ICDSC) is a 8 item checklist based on Diagnostic Statistical Manual (DSM)-IV criteria
- Based on observations of the patient over a 12 hour shift
- Score of 4 or greater represents a positive screen for delirium
- Sensitivity 99%; specificity 64%
- Minimal evidence that treatment with antipsychotics and dexmedetomidine reduces the incidence or duration of delirium
- Pharmacological treatment carries a risk for adverse effects and unknown long term effects

Objectives

- Primary:
  - Determine the incidence of delirium in patients requiring mechanical ventilation (MV) for > 48 hours admitted to SMH ICU
  - Describe pharmacological treatment for delirium in SMH ICU
  - Determine the time to first resolution and recurrence of delirium per patient prescribed pharmacological treatment and pre-emptive treatment
- Secondary:
  - Describe adverse effects of pharmacological treatment
  - Describe adverse events

Methods

- Design: Retrospective cohort study
- Inclusion Criteria:
  - Age ≥ 18 years
  - Admitted to SMH ICU from Jan 24, 2016 – June 23, 2017
  - Have at least one ICDSC score ≥ 4 during admission
  - Require MV ≥ 48 hours
- Exclusion Criteria:
  - RASS (Richmond Agitation Sedation Scale) score of ≤-3
  - Patients being terminally weaned
- Sample size:
  - N=178; P=0.65, d=0.06, 95% Confidence Level
  - Subjects were selected in reverse chronological order
- Statistical Analysis:
  - Descriptive statistics
- Definitions:
  - Resolution: ICDSC score ≤ 4 for 48 hours
  - Recurrence: ICDSC score ≥ 4 within 48 hours of resolution
  - Pre-emptive Treatment: 24 hours prior to ICDSC score ≥ 4

Table 1: Patient Characteristics

| N=178 | Female, n (%) | 61 (34) |
| Age (years), median (IQR) | 61.5 (53-70) |
| Day of ICU Admission with ICDSC score ≥ 4, median (IQR) | 5 (4-7) |
| APACHE II Score, median (IQR) | 20 (16-26) |
| Length of MV (days), median (IQR) | 6.7 (4.2-9.8) |
| ICU Length of Stay (days), median (IQR) | 9.5 (7-13.8) |
| Hospital Length of Stay (days), median (IQR) | 26 (15-46) |
| Admitting diagnosis, n (%) | Sepsis (pneumonia, skin soft tissue, UTI) 62 (35) |
| Cardiac Arrest/ACS/Cardiogenic Shock | 27 (15) |
| Substance Use Disorder or Overdose | 19 (11) |
| COPD/Asthma Exacerbation | 14 (8) |
| GI bleed | 8 (4) |
| Hepatic Failure | 7 (4) |
| Stroke | 6 (3) |
| Other | 35 (20) |
| ICU Mortality, n (%) | 5 (3) |
| Hospital Mortality, n (%) | 18 (10) |
| Chronic Use of Antipsychotics Prior to Admission, n (%) | 22 (12) |

Table 2: Incidence of Delirium

- Requiring MV ≥ 48hrs admitted during study period N=729
- ICDSC ≥ 4, n (%) 360 (49)

Table 3: Resolution and Recurrence of Delirium

- Pharmacological Intervention (N=178)
- Resolution, n (%) 63 (46)
- Time to Resolution median, (IQR) 3 (2-5) days
- Lost to Follow-up, n (%) 14 (10)
- Recurrence, n (%) 23

- Pre-emptive Pharmacological Treatment (N=178)
- Resolution, n (%) 27 (40)
- Time to Resolution median, (IQR) 3 (3-5) days
- Lost to Follow-up, n (%) 6 (9)
- Recurrence, n (%) 7

Table 4: Risk Factors for Delirium

- History of Alcohol or Drug Abuse, n (%) 65 (37)
- Exposure to Benzodiazepine CIVI in the First 24 Hours of ICU Admission, n (%) 57 (32)
- Pre-existing Dementia, n (%) 6 (3)
- No Mobilization Within 48 hours of ICU Admission, n (%) 156 (70)

Table 5: Adverse Events

| n=144 | Bradycardia, n (%) | 7 (4) |
| Hypotension, n (%) | 14 (10) |
| Torsades De Pointes, n | 1 |
| Neuroleptic Malignant Syndrome, n | 1 |

Table 6: Adverse Events Per Patient

| N=178 | Self-extubation, n (%) | 3 (1) |
| Self-removal of an invasive tube, catheter, or line, n (%) | 24 (13) |
| Self-removal of > 1 invasive tubes, catheters, or lines, n (%) | 16 (9) |

Conclusion

- Delirium is associated with serious adverse events
- Resolution of delirium did not appear to be associated with pharmacological treatment and/or pre-emptive treatment
- Delirium Management in a Medical and Surgical ICU
- Pharmacological interventions continue to be used as treatment options despite minimal evidence and risk of adverse effects
- New treatment options need to be explored for treating delirium...