Airway Management in the Acutely Altered Tox Patient

Key Article

- *Freund Y, Viglino D, Cachanado M, et al. Effect of noninvasive airway management of comatose patients with acute poisoning: a randomized clinical trial (NICO Trial). JAMA. Published online November 29, 2023.*

Background

- Acute altered mental status after ingestion of alcohol and other substances are a common cause of presentation to ED.
- In fact, in the US alone, it is estimated that approximately 20,000 patients are intubated for acute poisoning each year.
- In the case of severe obtundation (GCS $\leq$ 8), there may be an increased risk of aspiration, pneumonia, and hypercapnic respiratory failure
- As we all know, intubation is not a risk-free procedure. So, decisions about the risks and benefits of intubation need to be carefully considered.

Objective

- To test the hypothesis that whether a strategy of withholding intubation in patients with coma due to acute poisoning would improve outcomes compared with routine practice in which the decision of intubation is left to the discretion of the physician.

Methods

- Multicenter, unblinded, randomized control trial of withholding intubation conducted in 20 French emergency departments and 1 ICU.
    - Inclusion criteria
        - Adults aged $\geq$ 18 years old
        - Clinical suspicion of acute poisoning
        - GCS < 9
    - Exclusion criteria
        - Pregnant
        - Incarcerated
        - Other emergent clinical conditions: Respiratory distress, suspicion of brain injury, seizure, or shock
        - Poisoning from cardiovascular drugs (BBs, CCBs, ACE-I's)
        - If the drug could be acutely reversible (opioids and benzodiazepines)
- Intervention
    - Randomized 1:1 ratio of control:intervention
    - Randomization could occur in the ambulance (Physician-led EMS in Europe), in that case there were sealed envelopes available to the treating physician
    - Consent was waived, unless Legally authorized representative was available

- **Intervention Group:** Intubation was *withheld* unless the patient experienced seizure, hypoxia (SpO2 < 90% despite NC O2), vomiting, or shock (SBP < 90 mmHg after 1L IVF) for 4 hours. Afterwards the patient was managed at the discretion of the emergency physician
- **Control Group**: Decision to intubate was left at the discretion of the EM physician.

- Outcomes
  - Primary: *composite* endpoint of in-hospital death, length of ICU stay, length of hospital stay over 28 days.
    - Primary outcome compared groups using a "win ratio" which compares the incidence of the individual outcomes between the 2 groups, then creates a ratio of wins, ties, and losses.
  - Secondary: Individual components of the primary outcome, % patients receiving mechanical ventilation, ventilator days, % patients who developed pneumonia, & intubation adverse events (such as desaturation, dental trauma, vomiting, cardiac arrest, hypotension, failed first-pass intubation).

Results

- Total patients: 237 patients randomized → after exclusions, 112 in the restricted intubation group, 107 in the usual care group.
  - Average age was 33 years old
  - Median GCS score was 6
  - Most common ingestion: alcohol (67%), benzodiazepines (~40%), other drugs (cocaine, heroin, amphetamines, etc.)
  - Intubations:
    - Restricted group: 19 patients (16%)
    - Control group: 63 patients (58%)
- Primary outcome:
  - "Win Ratio" of 1.85 in the in the delayed intubation group
    - There were no deaths in either group
    - Intervention group had lower ICU stay (0 hours vs. 24 hours)
    - **The main benefit for the composite primary end point is driven by the reduction in ICU length of stay, and the significantly reduced proportion of patients admitted in the ICU.**
- Secondary outcomes
  - No difference in adverse events from intubation, pneumonia, median length of ICU stay, and length of hospital stay.
- Bottom line: A conservative strategy can be used to avoid unnecessary intubation in comatose patients after acute poisoning and could lead to a lower risk of adverse events.

Limitations Identified by the Authors

- Unblinded trial – physician behaviors may have been biased
- Unclear if GCS is the best measure of mental status in non-trauma patients
- Small sample

Author conclusions

- Among comatose patients with suspected acute poisoning, a conservative strategy of withholding intubation was associated with a greater clinical benefit for the composite end point of in-hospital death, length of ICU stay, and length of hospital stay.