Duration of mechanical ventilation with non-benzodiazepine vs. benzodiazepine-based sedation

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Introduction
Current guidelines recommend analgosedation before sedation in mechanically ventilated adult intensive care unit (ICU) patients. If sedation goals are not met, non-benzodiazepines (NBZ) are recommended over benzodiazepines (BZ) for additional therapy. To our knowledge, there are no studies that compare patients who received combination sedative therapies, including analgosedation with either BZ or NBZ. This study aims to determine if there is a difference in duration of mechanical ventilation (MV) in patients who received NBZ (analgesic +/- propofol or dexmedetomidine) vs. BZ based sedation (BZ +/- analgesics +/- propofol or dexmedetomidine).

Methods
IRB approved retrospective observational study of patients admitted to the medical ICU of a tertiary care hospital between July 2012 and August 2015. Patients had to be treated with either NBZ or BZ based sedation and require MV for greater than 24 hrs. The primary endpoint is duration of MV and secondary endpoints are prevalence of delirium, and ICU and hospital length of stay (LOS).

Results
A total of 402 patients were included; 160 in BZ and 242 in NBZ group. There were no differences in baseline characteristics between BZ and NBZ including; age (median [IQR] 58 yr [48-68] vs. 62 [52-74] or APACHE II score 25 [21-32] vs. 26 [21-30]. Most common primary diagnoses were respiratory failure, shock and pneumonia. MV duration was BZ; (70.5 hrs [45.2-132] vs. NBZ; 55 [36.6-88.4] p<0.01). Prevalence of delirium was 65.8% in BZ vs. 50.2% in NBZ, p<0.01. ICU and hospital LOS was longer in BZ group (4.8 d [3-8] vs. 3.7 [2.6-6] p<0.01) and 10.3 d [5.6-16.2] vs. 7.5 [5-12.7] p<0.01). Subgroup analysis compared BZ group to the NBZ group excluding patients who only received analgesics, showed prolonged MV (70.5 hrs [45.2-132] vs. 49.4 [31.4-87.2] p<0.01), ICU LOS (4.8 d [3-8] vs. 3.7 [2.5-6.2] p= 0.04) and hospital LOS (10.3 d [5.6-16.2] vs. 6.8 [5-11.5] p<0.01).

Conclusion
Analgosedation and NBZ based sedation regimens rather than BZ based sedation in critically ill, MV adults may reduce duration of MV, incidence of delirium, ICU and hospital LOS.
Evaluating Outcomes of Poractant alfa (Curosurf) vs. Calfactant (Infasurf) in Neonates

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Introduction:

Pulmonary surfactant works to reduce surface tension that can lead to lung collapse, decreased compliance and respiratory distress syndrome (RDS). There is quite a bit of literature available indicating the benefits of surfactants. However, there is little data comparing poractant alfa and calfactant specifically. Memorial University Medical Center (MUMC) has used both products in recent years. The purpose of this research was to retrospectively evaluate safety and efficacy outcomes of using poractant alfa as compared to calfactant for the treatment of RDS in neonates.

Methods:

The hospital’s electronic medical record was reviewed to identify neonates weighing 500-2000g, born before 34 weeks’ gestation receiving one or more doses of either calfactant or poractant alfa within 48 hours of birth at MUMC for the treatment of RDS developing within 15 hours of life. Data was collected to assess baseline characteristics, outcome measures, and Apgar severity score.

Results:

94 patients met inclusion criteria. The use of calfactant was associated with more days on the ventilator compared to poractant alfa (9.9 vs 8.8 95% CI -5.2256-3.1256, p= 0.6187). Calfactant was also associated with a longer hospital length of stay (66 vs 57 95% CI -23.1426 to 5.7426 p=0.2346). There were two deaths in the calfactant group and three in the poractant alfa group (4.3% vs 6.4%, p=1.0000). The percent of patients requiring redosing was 40.4% in the calfactant group and 25.5% in the poractant alfa group (p=0.1877). The average cost per patient of calfactant was $534, while for poractant alfa it was $729. After adjusting the cost for the more frequent redosing required by calfactant, the total cost of poractant alfa was $7,538 more than calfactant.

Conclusion:

This analysis demonstrated that calfactant was associated with more days on ventilator, increased length of hospital stay, and more frequent redosing as compared to poractant alfa. However, there was a trend toward increased mortality associated with poractant alfa and it is an intrinsically more expensive product.