Increased Risk of Post Extubation Stridor in COVID-19 Pneumonia

Lance Pangilinan, Richard Kallet, and Gregroy Burns

Disclosures

Mr Kallet: ContinuED and LUNGPACER Medical

INTRODUCTION

- Severe Covid-19 Pneumonia results in prolonged intubation, frequent use of prone positioning and increased BMI → Increased risk for post extubation stridor (PES)
- There is scarce literature surrounding PES in Covid-19 PNA
- Risk factors for PES include: female gender, prone positioning, prolonged intubation, critical illness, morbid obesity, ETT size, height, and documented traumatic intubation [1–5]
- Previously, reported PES incidence was 1.4% at our institution
- Dexamethasone treatment for COVID-19 was adopted at our institution[6]
- This retrospective cohort study was aimed at measuring PES risk in COVID-19 PNA & to identify independent risk factors for PES in this population

METHODS

- Study Design: Single Center Retrospective Cohort
- Inclusion Criteria: subjects received mechanical ventilation (MV) >48 hours , + PCR for Covid-19 PNA
- Exclusion Criteria: Tracheostomy, deceased, or transferred to outside hospital without a prior extubation trial
- Effects of Dexamethasone on PES risk (ie. administered < 6 days prior to extubation)
- Statistical Analysis:
  - Categorical variables →Chi squared test; Continuous variables → Wilcoxon rank sum test
  - Univariate logistic regression → measure association between risk factors and PES
  - Multivariate logistic regression → adjust for confounding variables
  - Alpha set to 0.05

RESULTS

- PES occurred in 14%(10) of 69 enrolled subjects , 40% (5/39 cases male, 5/20 cases female) of whom required reintubation
  - **Stridor occurred within 16 min [IQR: 5-40] of onset. Reintubation occurred within 24 min [IQR: 3-80] after a trial of 1 or 3 nebulized Racemic Epinephrine Tx's (60% vs. 40% respectively)**
- Only tendencies distinguished PES from Non-PES subjects:
- Median [IQR] MV duration tended to be greater in PES subjects:

  18 [6-23] vs. 8 days [IQR: 5-13], (p = 0.07).
- PES subjects tended towards morbid obesity and required more prone positioning (PP)

  Median BMI: 35 [IQR: 33-36] vs. 31 kg/M^2[IQR: 28-37], (p = 0.25)

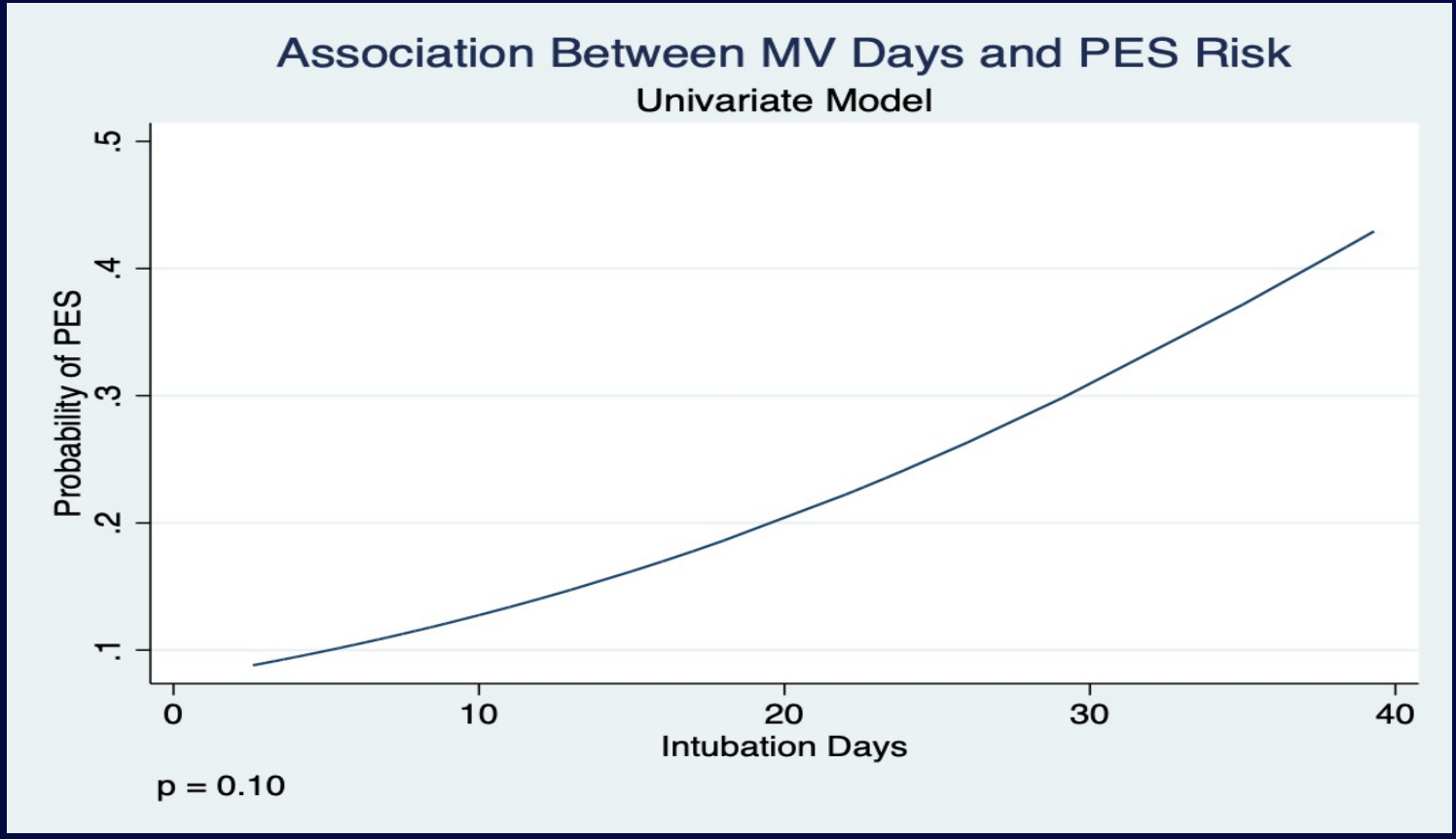
  PP: 80% vs. 56% (p = 0.15)
- Dexamethasone (Dex): no impact on PES in 41% of subjects receiving Rx

  13.8% in Dex. vs. 14.6% in Non-Dex., (p = 0.92).
- Univariate Analysis: MV days and PES risk was not significant [Odds Ratio and 95% Confidence Interval]

  OR: 1.06 (0.99 to 1.13), p = 0.10
- Multivariate Analysis: MV days and Gender significant associated with ↑ PES risk when adjusted for age, BMI, and height
- MV Days, **OR: 1.11 (1.02 to 1.20), p = 0.02**
- Female, **OR: 12.1 (1.07 to 136), p = 0.04**

UCSF | ZUCKERBERG SAN FRANCISCO GENERAL Hospital and Trauma Center

RESULTS



DISCUSSION

- We found that patients with Covid-19 PNA had a greater risk for PES in comparison to what we had previously reported in non-COVID subjects, half of COVID subjects required re-intubation
- Adjusted model: MV duration significantly associated with PES
  - Concern due to prolonged MV in COVID-19 pneumonia
- Both height and female gender were significantly associated
- Dexamethasone use for COVID-19 treatment was not associated with decreased PES risk
  - Surprising- Dex used prophylactically for PES[7]
- Study limitations- small sample size

CONCLUSION

MV duration was 2.25 times greater among COVID-19 subjects

COVID-19 pneumonia was associated with a higher risk of PES that reflected the interplay of increased MV days and female gender

The administration of Dexamethasone for treatment of Covid-19 pneumonia was not associated with a lower risk of PES

REFERNCES

1. Pluijms, Wouter A et al. “Postextubation laryngeal edema and stridor resulting in respiratory failure in critically ill adult patients: updated review.” *Critical care (London, England)* vol. 19,1 295. 23 Sep. 2015, doi:10.1186/s13054-015-1018-2

2. Erginel, Sinan et al. “High body mass index and long duration of intubation increase post-extubation stridor in patients with mechanical ventilation.” *The Tohoku journal of experimental medicine* vol. 207,2 (2005): 125-32. doi:10.1620/tjem.207.125

3. Ito, Junko et al. *Masui. The Japanese journal of anesthesiology* vol. 61,2 (2012): 189-92.

4. Hans, P et al. “Acute bilateral submandibular swelling following surgery in prone position.” *European journal of anaesthesiology* vol. 23,1 (2006): 83-4. doi:10.1017/S0265021505231824

5. Sinha, A., Agarwal, A., Gaur, A., & Pandey, C. K. (2001). Oropharyngeal swelling and macroglossia after cervical spine surgery in the prone position. *Journal of neurosurgical anesthesiology*, *13*(3), 237–239. https://doi.org/10.1097/00008506-200107000-00010

6. RECOVERY Collaborative Group et al. “Dexamethasone in Hospitalized Patients with Covid-19.” *The New England journal of medicine* vol. 384,8 (2021): 693-704. doi:10.1056/NEJMoa2021436

7. Kuriyama, Akira et al. “Prophylactic Corticosteroids for Prevention of Postextubation Stridor and Reintubation in Adults: A Systematic Review and Meta-analysis.” *Chest* vol. 151,5 (2017): 1002-1010. doi:10.1016/j.chest.2017.02.017