

Ventilator Associated Pneumonia in Pediatric Trauma Patients

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Background:

Ventilator associated pneumonia (VAP) is a common hospital-acquired infection found in intubated trauma patients. In previous adult studies, VAP has been associated with an increase in length of stay, cost, morbidity, mortality, and longer mechanical ventilation. There remains little examination of the risk factors, prognosis, and microbiology of VAP within the pediatric trauma population. This study aims to analyze factors associated with VAP in pediatric trauma patients.

Methods:

The Riley Hospital for Children Trauma Registry was utilized to identify intubated pediatric trauma patients from 2016-2020. Patients were excluded if intubated for less than 48 hours. VAP was defined as positive if patients met either Centers for Disease Control definition and or were clinically diagnosed with and treated for VAP. Univariate and multivariate modeling was performed.

Results:

A total of 171 patients met inclusion criteria and 43 (25%) were diagnosed with VAP. The median age was 8 years (2-13) and ISS was 26.5 (22-35). The median duration of intubation was 203.8 hours (117.3-331.3). The overall mortality was 55 (32.2%). While variables such as lower age and use of MTP resulted in a higher likelihood of mortality, VAP diagnosis was not associated with increased mortality. BAL analysis displayed that the most common cultured bacteria were *H. influenzae*, *Staph. aureus*, and *Strep. Pneumoniae* with most VAPs being diagnosed on day 2 of admission. When analyzing the impact of age, ISS, intubation hours, ICU days, and GI prophylaxis on VAP, only age was significantly associated with VAP: for each year the odds of VAP rose by 10%.

Conclusions:

A quarter of the pediatric trauma patients were diagnosed with VAP during the study period. No modifiable risk factors were found for VAP with only patient age demonstrating significance for the diagnosis. Further investigation into VAP definition and prevention in pediatric trauma patients should occur given it's prevalence.