Acute Post-Tracheostomy Clinical Decompensations in Infants—Are There Predictive Markers?

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INTRODUCTION

• Due to more younger and sicker neonates surviving, a growing number of infants are requiring prolonged ventilation. The need for prolonged ventilation typically requires a tracheostomy.
• While a majority tolerate this procedure well, some infants demonstrate acute deterioration following tracheostomy. There is little published literature on the etiology or frequency of acute complications occurring in infants undergoing tracheostomy placement.

OBJECTIVES

• The objectives of our study were to:
  • Define the population of infants who require tracheostomy
  • Identify acute post tracheostomy clinical decompensations
  • Seek predictive markers associated with acute post tracheostomy clinical decompensations

METHODS

• We analyzed almost eight years of retrospective de-identified clinical data provided by the Infant Pulmonary Disorders Data Repository at Children’s Mercy Kansas City. Infants were classified as either having or not having acute post tracheostomy clinical decompensation, defined as requiring any of the following within 72 hours of tracheostomy placement:
  • Escalation in ventilator support
  • Initiation of iNO
  • Induced paralysis
  • Initiation of vasopressor medications
  • Statistical analysis was performed using SAS version 9.4 and SPSS version 20
  • Paired t-test for changes in pre/post tracheostomy markers
  • Chi-squared test (categorical variables) and Mann-Whitney U test (continuous variables) for bivariate analysis of risk factors

RESULTS

100 infants underwent tracheostomy during our study time

34% of infants developed acute post tracheostomy clinical decompensation

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Pre-tracheostomy findings of higher airway pressure and PH occur in the acute post tracheostomy clinical decompensation

SUMMARY

• Most infants (66%) tolerated the tracheostomy procedure without acute clinical decompensation
• Infants requiring higher PEEP, MAP, or who had echocardiogram findings revealing PH or left ventricular dysfunction prior to tracheostomy had an increased rate of decompensation
• Birth weight, gestational age, and timing of tracheostomy were not significantly associated with decompensation
• The infants with acute post tracheostomy clinical decompensations had a higher rate of death before discharge

LIMITATIONS

• Retrospective nature shows association, not causality
• Study occurred in a single center, low overall number of patients
• Not all infants received pre-tracheostomy echocardiograms