

Predictors of per-intubation cardiac arrest in pediatric patients presenting to the emergency department

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Introduction:

Airway management is one of the vital resuscitative procedures undertaken in many critically ill pediatric patients presenting for emergency care. Around (2–33/10,000) of all pediatric patients presenting to the emergency department (ED) require airway protection for various conditions, such as respiratory failure, airway protection, and cardiac arrest. In children, airway management demands great caution because of their age-related differences in anatomical and physiological characteristics and limited physiological reserves.

Rapid sequence intubation (RSI) has become the standard technique to facilitate pediatric emergency airway management.

The objective of the study is to determine the risk factors associated with peri-intubation cardiac arrest in pediatric patients presenting to the emergency department.

Methods:

This retrospective matched case-control study was carried out at the Emergency Department of the Aga Khan University Hospital from January 01, 2017, to December 31, 2022, will be included. Cases were identified as pediatric patients (age <18 years) who experienced cardiac arrest within 20 minutes of receiving induction agents. Each case was matched with four controls (1:4) who did not experience peri-intubation cardiac arrest. Multivariable logistic regression was employed to identify risk factors for peri-intubation cardiac arrest, with significance set at a p-value of ≤ 0.05 .

Results:

A total of 125 patients were included in the study (25 cases and 100 controls). The median age was 18 months. Among patients who underwent PICA, 40% achieved ROSC, and bradycardia was the most common cardiac rhythm observed.

Multivariable regression analysis revealed that hypoxemia 8.96(2.52-31.88), Shock Index 3.78(1.06-13.52), Modified shock index 4.93(1.09-22.24) were independent risk factors for PICA.

Conclusion:

The study identified potential risk factors linked to peri-intubation cardiac arrest in pediatric patients. Implementing therapeutic interventions to mitigate these risk factors is crucial to prevent peri-intubation cardiac arrest.