Introduction

Arrhythmia - A major determinant of post cardiac surgery outcomes
Early post cardiac surgery arrhythmias in children - not known
Incidence reported 8.6% to 48%
Previous authors included benign variations in rate and rhythm
Hemodynamically significant arrhythmias impact morbidity
Direct impact on cost, planning & future of healthcare in our country
This study conducted at a high volume pediatric cardiac centre at Bengaluru, India
Specific focus on clinically relevant arrhythmias affecting the outcome

Objectives

To study incidence of hemodynamically significant arrhythmias in early post cardiac surgery period in children
To study the risk factors associated with these arrhythmias

Methodology

Study type: Prospective cohort study
Population: Children under 18 years undergoing cardiac surgery (from day of surgery till discharge)
Criteria of inclusion & grouping: Group 1: With hemodynamically significant arrhythmias in early post operative period that necessitated an intervention
Group 2: Without any hemodynamically significant arrhythmia in early post-operative period
Criteria of exclusion: Pre-existing cardiac rhythm abnormality/pacemaker & transient rhythm disturbances in immediate post operative period
Data analysis: SPSS 20 software, Mann Whitney test and Chi square test

Results

2271 children were included in the study over 10 months
Group 1: 147 (6.4%) - With arrhythmias
Group 2: 2124 (93.6%) - No arrhythmias
Frequency of types of arrhythmias - Figure 1
Intraventricular tunnel repair and common atrio-ventricular canal defect repair are significantly associated with arrhythmias (Figure 2)

Discussion

This study, largest cohort yet to define the overall incidence of hemodynamically significant arrhythmias
We noted incidence over a period of 10 mths as 6.4%; which is lower than reported (6.8% to 36.9%)
Earlier studies focussed on specific surgical techniques / specific arrhythmia / late arrhythmias (Table 2)
Multivariate logistic regression analysis of significantly associated variables, revealed:
Lower post-operative ventilation OR 35.4, 95% CI = 10.6, 118.5
Hypocalcemia, OR 10.74, 95% CI = 1.3, 88.6

Conclusion

Incidence of post cardiac surgery arrhythmias is lower than earlier reported
Longer post op ventilation time and hypocalcemia is a risk for life threatening arrhythmias
Maintaining a normal metabolic milieu with respect to blood gases & electrolytes as well as optimal ventilation & inotropic usage can prevent post-cardiac surgery arrhythmias

Table 2: Comparison of statistics of early post cardiac surgery arrhythmias observed by other authors vs the present study

References


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Post pediatric cardiac surgery arrhythmias - can we predict and prevent their occurrence in children?
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