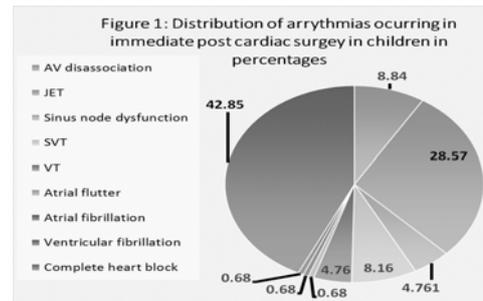


Post pediatric cardiac surgery arrhythmia - can we predict and prevent their occurrence in children after cardiac surgery?

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Introduction: Arrhythmias in immediate post pediatric cardiac surgery are not uncommon. Accurate incidence and their risk factors have been inadequately studied. This study was carried out to determine incidence of life threatening arrhythmias causing hemodynamic disturbances and determinants thereof in pediatric post cardiac surgery patients. **Methods:** A prospective cohort study at a tertiary care hospital of India over 10 months. Base line data of all patients noted pre operatively. Patients were observed post operatively for arrhythmias causing hemodynamic disturbances. Ethical clearance was taken from institute ethics committee. Laboratory and clinical parameters were recorded on day of occurrence of arrhythmia or on first post-operative day in the children who had no arrhythmias. These parameters included those required to determine the variables listed in Table 1. Statistical analysis was done using SPSS 20 software. Mann Whitney test and Chi square test for comparison of proportions were used to determine significance of association. **Results:** 2271 children undergoing cardiac surgery over a period of 10 months were included. The number of children who had life threatening arrhythmias requiring immediate treatment was 147 (6.9%) (Group 1) and those without arrhythmias were 2124 (Group 2). The distribution of types of arrhythmias in group 1 is depicted in Figure 1. **Table 1* depicts the significance of association of various parameters between group 1 & group 2 during immediate post cardiac surgery period.**

Variable (Group 1 n=147 & group 2 n=2124)**	p Value	Clinical implication	
Significant association present			
Cardiopulmonary by-pass time in minutes	0.00	These factors may predict arrhythmias. Protective strategies may be as: <ul style="list-style-type: none"> • Less invasive ventilation • Intense monitoring, early correction of biochemical factors • Strict glycemic control • Optimize inotropic support 	
Cross clamping time in minutes	0.00		
Post op ventilation duration in hours	0.00		
Low Serum Ionized calcium on day of arrhythmia (mmol/L)	0.004		
Hyperglycemia on day of arrhythmia (mg/dL)	0.004		
Low Partial pressure Oxygen in arterial blood	0.025		
Adrenaline infusion administered	0.000		
Milirione infusion administered	0.000		
Isoprenaline infusion administered	0.000		
More than three inotropes administered	0.003		
No Significant association present			
Age in months	0.102		Comparable age and gender composition in both groups
Gender	0.448		
Raised Pre-operative serum Creatinine	0.887	**Age, bypass time, cross clamping time and post-operative ventilation time are not normally distributed. Hence non parametric tests (Mann Whitney Test was used)	
Raised Post-operative serum Creatinine on day of arrhythmia	0.083		
Pre-operative leuckocytosis	0.053		
Post-operative leuckocytosis on day of arrhythmia	0.735		
Acidosis present on arterial blood gas analysis	0.929		
Low Serum bicarbonate levels on day of arrhythmia	0.924		
Low Serum Potassium on day of arrhythmia	0.47		
Noradrenaline infusion administered	0.184		

* Limited data and statistical calculations presented due to paucity of space

Conclusions: The incidence of arrhythmias are likely to reduce by being more intense in monitoring blood biochemistry and gases with strict glycemic control and being less invasive in interventions like cardiopulmonary bypass time, cross clamping time, ventilation duration and inotropic usage.