Evaluation of complete heart block after open heart surgery for congenital heart disease

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Objectives:
Cardiac conduction system injury is a cause of postoperative cardiac morbidity following the repair of congenital heart disease. The most important rhythm problem is complete atrioventricular block (CHB) and its frequency varies from 0.7 to 3. Pacemaker implantation is a standard recommendation for patients with persistent CHB more than 7 to 10 days. Our goal was to define the incidence of permanent and transient CHB and compare patients characteristics.

Method:
The hospital records of all pediatric patients with early postoperative heart block following congenital heart surgery at our institution between January 2010 and June 2014 were reviewed retrospectively. Patients divided in to two groups. Group-I (transient CHB) and Group-II (permanent CHB). Preoperative diagnosis, peroperative and postoperative clinical status and variables were compared.

Results:
Among 1450 congenital cardiac surgeries, 87 (6%) patients had postoperative CHB. There were 59 (4%) patients in Group-I and 28 (2%) in Group-II. All of the patients in Group-II had permanent pacemaker implantation. There were 21 males (36%) in Group-I and 17 (61%) in Group-II. The weight (Group-I: 6 kg (2.9-30); Group-II: 7.6 kg (2.8-50)) and the operation age (Group-I: 6 months (0.1-84); Group-II: 10 months (1-124)) were similar in two groups. The most common diagnosis in Group-I were tetralogy of Fallot (TOF) (n=14), atrioventricular septal defects (AVSD) (n=11), ventricular septal defect (VSD) (n=7) and transposition of great arteries (TGA) (n=6) and in Group-II TOF (n=8), VSD (n=6), AVSD (n=4), and left ventricular outflow obstruction (n=4).
Temporary AVB recovered to sinus rhythm within a median of 3 days (1–21 days) after surgery. Permanent pacemakers were implanted at a median of 10 days (7–21 days) after surgery. There were significant differences in ICU stay (Group-I; 6 days(2-25days) Group-II; 13 days(4-90)) and hospital stay (Group-I; 10 days(2-33days) Group-II; 20 days(10-90) between two groups (p<0.05).

Conclusions:
CHB is an uncommon complication of congenital heart surgery. TOF and AVSD are at highest risk for CHB postoperatively. Heart block can recover in 2/3 of patients usually at the postoperative ninth day.