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Sildenafil in the postoperative course after surgery in children with CHD

Cardiac Intensive Care Unit, Cardiovascular Hospital Louis Pradel, University Medical Center of Lyon, France (1)
Cardiothoracic Surgery, Cardiovascular Hospital Louis Pradel, University Medical Center of Lyon, France (2)
Pediatric and Congenital Heart Disease, Cardiovascular Hospital Louis Pradel, University Medical Center of Lyon, France (3)

Pulmonary hypertension (PHT) is one main cause of postoperative morbidity and mortality after repair of CHD. Although efficacy of iNO is well-established, the utilization of sildenafil is not yet clearly defined. The aim of this study was to assess efficacy of sildenafil after CHD repair in children.

Methods: Retrospective analysis of patients who received sildenafil in postoperative course after CHD repair, from 2005 to 2012. Duration of mechanical ventilation, CICU and in-hospital stay, pulmonary pressure and overall outcome were assessed. Patients were divided into group I (sildenafil onset < H24) and group II (> H24).

Results: 50 patients were included: 30 in group I and 20 in II. Mean age was 11.5mos, (med3.7mos), mean weight 4.4kg. CHD included: 20VSD, 2VSD+coarctation, 9AVSD, 3truncus arteriosus, 2TGV, 3TOF, 9abnormal pulmonary venous return, 3miscellaneous. Mechanical ventilation duration was 8.4d, CICU stay 12.9d, hospital stay 21.6d. Bypass time was 100.8±45mn, aortic clamp time 60.2±22mn. InhaledNO was administered within 5mn post-bypass, at 11.3±5.5ppm and duration of 4±3 days. Sildenafil dose was 0.25-2mg/kg/4h, 1stdose was 0.67mg/kg/4h. Mean sildenafil dose was 1.16mg/kg/4h at the time of iNO withdrawal. Duration of sildenafil was 22.4±14.6days. Preoperative systolic pulmonary pressure (PAPs) to systolic aortic pressure (PAs) ratio was 0.94±0.1. Preoperative PAPs decreased from 72 to 36.5mmhg at iNO cessation, PAPs/PAs from 0.94 to 0.43 and PAPmean/PAmean ratio from 0.8 to 0.46. PaO2/FIO2 ratio increased from 121.4 at end of bypass to 269 at iNO cessation. Duration of mechanical ventilation was 6.2d vs 11.6d (p= 0.04), CICU stay 9.4d vs 18d (p= 0.005), in-hospital stay 16d vs 30d (p= 0.001), respectively in groups I and II. Duration of iNO administration was shorter in group I (3.3d) than in II (5d), p=0.05. Preoperative PAPs did not differ between the 2 groups. No significant side effect occurred. Overall mortality was 4% and 4 patients needed long term sildenafil therapy. At latest evaluation, 38% were in NYHA class I, 40% in NYHA II and 22 in NYHA III.

Conclusion: Sildenafil is safe and reliable in the postoperative course after surgery for CHD in children and efficacy is optimal if administered < H24 after bypass.