Role of Postoperative Hyperglycemia in Prediction of Outcome of Open Cardiac Surgery in Children

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Introduction: Hyperglycemia is common in critically ill children including post cardiac surgery patients, but its value in prediction of outcome is controversial.

Methods: 78 postoperative children were included in this study. Blood sugar (BS) levels were checked every 6 hours in the first 48 hours and values above 150 mg/dl considered hyperglycemia. Low cardiac output state (LCOS) defined as need for inotropes more than 10 micg/kg/min of dopamine for maintaining hemodynamic stability. Then correlation of postoperative hyperglycemia with LCOS and death in these patients studied.

Results: Median age and weight were 15.5 months 8.8 kg respectively. 24 patients (30.8%) developed LCOS and 4 (5.1%) died. Mean BS in 1st and 2nd postoperative days were 161.98 and 119.95 mg% respectively. In the first 24 hours, 44 patients (56.4%) and in the second day 6 (7.7%) developed hyperglycemia. There was no significant correlation between postoperative hyperglycemia and sex, age, weight, type of defect, RACHS complexity score and duration of mechanical ventilation.

Hyperglycemia in day 1 was correlated with number of inotropes (p=0.005) and in day 2 with bypass time (p=0.004). In the first postoperative day, 40.9% of the patients with hyperglycemia developed LCOS compared with 17.6% in those without hyperglycemia (p=0.027). Hyperglycemia in second day was a strong predictor of death (p=0.020) but not for LCOS (p=0.069). Mixing types of CHD (p=0.007) and pump time (p=0.001) were independent risk factors for LCOS and death. ROC curve analysis showed that BS>134.8 mg/dl in the first postoperative day and bypass time >68.5 min were cut off points for development of LCOS and death.

Conclusion: In this study hyperglycemia in the first postoperative day was common and a predictor of LCOS and in the second day, although not common, it was a predictor of death after open cardiac surgery in children.