

Matthew Cucino, MD, Dabin Ji, MD, Ashley Joseph, MD, Laura Gilbertson, MD, Renee Tolly, MD, Michael Fiedorek, MD
Emory School of Medicine, Children's Healthcare of Atlanta

Introduction

- Postreperfusion syndrome (PRS), defined by acute blood pressure, heart rate, and vasoplegic changes, is a potentially lethal intraoperative complication during pediatric liver transplantation (PLT) with a variable reported incidence

Methods

- Single-center retrospective study evaluated PLT patients from 2014 – 2021
- 98 risk factors were evaluated for association to 4 separate PRS outcomes
- Exposure to any of the 4 PRS signs were evaluated for association to 8 postoperative outcomes.

Results

- 135 patients
- 33 patients (24%) who met Aggarwal's criteria for PRS
- An additional 27 patients (20%) met Aggarwal's criteria in the first 10 minutes
- Vasopressor infusion(s) was initiated for sustained postreperfusion hypotension in 61 (45%) patients
- PRS was not found to be a risk factor for hepatic artery or portal venous thrombosis, re-exploration, infection, PICU or hospital LOS, re-transplant, or death.

PRS was not associated with post-operative morbidity or mortality

Independent Risk Factors for PRS Based on Aggarwal Criteria (5min), Aggarwal Criteria (10min), HR decrease >15%, and Vasoplegia Using Multivariable Logistic Regression Modeling

Data listed as Odds Ratio (OR), 95% CI, Statistical significance (p<0.05)

	OR	95% CI	P-value
Independent Risk Factors for PRS (Aggarwal 5min)			
Temperature Nadir Post-Reperfusion	0.27	0.10, 0.62	0.003
Pre-Reperfusion HR Decrease from Baseline	1.04	1.01, 1.09	0.029
Transfused pRBC (ml/kg)	1.22	1.06, 1.43	0.009
Total Blood Products (ml/kg)	0.91	0.82, 0.99	0.042
Independent Risk Factors for (Aggarwal 10min)			
Pre-Operative Hospital Days	1.05	1.01, 1.11	0.024
Independent Risk Factors for HR decrease >15%			
Female Sex	0.17	0.02, 0.83	0.048
Pre-Reperfusion Hematocrit	0.81	0.66, 0.95	0.022
Independent Risk Factors for Vasoplegia			
Female Sex	0.4	0.17, 0.90	0.029
Pre-Reperfusion Potassium	2.21	1.13, 4.57	0.025

Discussion

- There are many clinically significant independent risk factors for PRS severity of cooling after reperfusion, hemodynamic instability before reperfusion, pRBC transfusion, and higher serum potassium.
- Both female sex and higher hematocrits independently protective
- PRS was not associated with post-operative morbidity or mortality.

References

1. Zhang, L., Tian, M., Xue, F., & Zhu, Z. (2018). Diagnosis, Incidence, Predictors and Management of Postreperfusion Syndrome in Pediatric Deceased Donor Liver Transplantation: A Single-Center Study. *Annals of transplantation*, 23, 334–344.