

Continuous Renal Replacement Therapy in Pediatric Liver Transplant Patients with Acute Renal Failure

Background

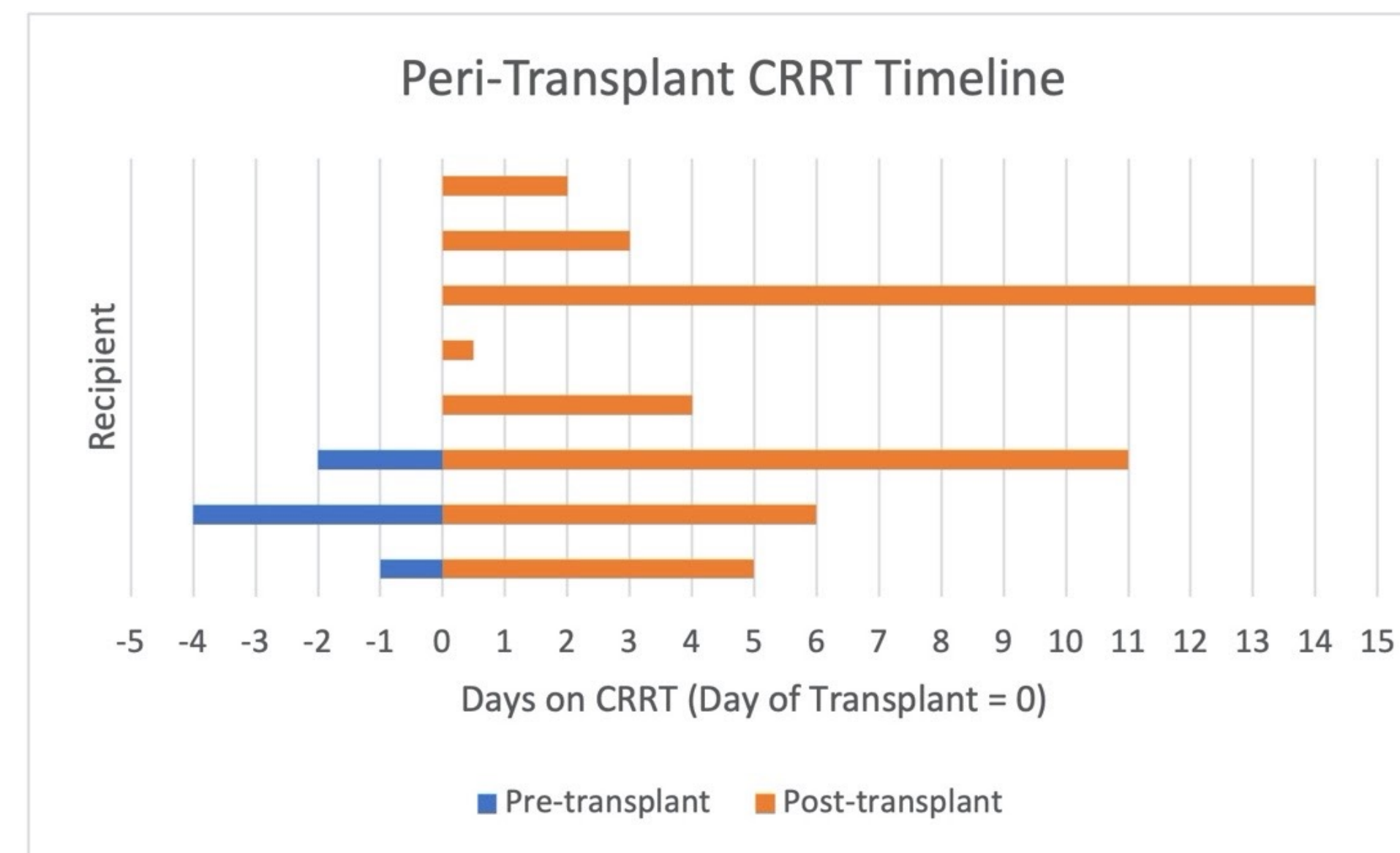
- Acute kidney injury (AKI) is common in pediatric patients with end stage liver disease undergoing liver transplantation (LT)
- Continuous renal replacement therapy (CRRT) is sometimes required for critically ill liver transplant candidates in the peri-transplant period
- CRRT in adult liver transplant recipients is well documented, but research in pediatric recipients is limited

Methods

- We retrospectively reviewed all pediatric liver transplants performed at our institution between 2017 and 2020 and identified cases in which CRRT was started pre- or intra-transplant in recipients
- The electronic medical record were reviewed for demographics, graft outcomes, intraoperative findings, clinical indications for CRRT, and hospital course

Age at Transplant	7.6 years (41 days – 17 years)
Gender	5 (62.5%) male 3 (37.5%) <u>female</u>
<u>Diagnosis</u>	
Acute Liver Failure	3 (37.5%)
ARPD & Congenital Hepatic Fibrosis	3 (37.5%)
Biliary atresia	2 (25%)
Calculated PELD	37.5 (-10 – 46)
<u>Match MELD</u>	
≤ 30	1 (12.5%)
> 30	3 (37.5%)
Status 1B	1 (12.5%)
Status 1A	3 (37.5%)
<u>Type of Donor</u>	
Deceased Donor	7 (87.5%)
Living Donor	1 (12.5%)
<u>Graft Type</u>	
Whole	5 (62.5%)
Partial	3 (37.5%)
<u>Indication for CRRT</u>	
Hyperammonemia	3 (37.5%)
Chronic Renal Failure	3 (37.5%)
Hyperkalemia	1 (12.5%)
Volume Overload	1 (12.5%)
Length of CRRT	7 days (range 1-14 days)
<u>Multiorgan Transplant?</u>	
No	5 (62.5%)
Yes	3 (37.5%)

Results



- Eight pediatric patients underwent CRRT during LT, including 3 recipients younger than 1 year and less than 10kg
- Median duration of CRRT was 6.63 (1-14) days
- Vascular access was established through the right internal jugular in all the recipients, with catheter size ranging from 7-14.5 French
- None of the recipients experienced death or graft loss
- Median intensive care unit and overall hospital length of stay was 15 days (range 4-40 days) and 29 days (range 8-88 days), respectively
- At 457 median days of follow up (11-1546 days) post-liver transplant, all recipients had good liver graft function, renal function without need for dialysis and have met all developmental milestones with appropriate neurocognitive function

Conclusions

- CRRT can be a life-saving rescue treatment for infant liver transplant recipients and has various indications in these high-risk patients
- In our experience, CRRT can be used transiently with good outcomes and without compromising long-term graft or renal function
- Additional, multi-center studies are required to better characterize indications, risk factors, and long-term outcomes with CRRT in pediatric liver transplantation

Implications

- Intra-operative CRRT during pediatric liver transplant (even in small infants), although challenging, is a promising tool to support patients during the intra-operative period, when electrolyte, fluid and acid-base aberrancies might otherwise result in poor patient/graft outcomes or patient demise

Disclosures

No financial disclosures.