

# Cystatin C as a Marker of Renal Injury in Pediatric Heart Transplant Recipients



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## Purpose

- Renal injury is a known complication after heart transplantation, related to calcineurin inhibitors.
- Cystatin C (CysC), with its calculated estimated glomerular filtration rate (eGFR), has been used as a more sensitive biomarker to detect renal injury than blood urea nitrogen (BUN) and creatinine (Cr).
- There are few data regarding CysC after heart transplant (HT).
- We hypothesized that there would be a direct effect of Tac level on eGFR without effect on BUN and Cr in the first year after HT.

## Methods

- We performed a retrospective cohort study examining repeated measures of CysC/eGFR, BUN, Cr, and Tac levels of the children at our center in the first year after HT.
- Multivariate analysis using linear mixed models with lagged variables was performed.

## Results

- Nine patients were examined (3 male, median age: 1.5 years [IQR 0.3, 2.7]). Median evaluation time post-transplant was 186 days (IQR 124, 225).
- Four patients had asymptomatic 2R rejection, with no higher-grade rejection.
- The following mean numbers of observations per patient were obtained: TL 58, eGFR 39, and BUN/Cr 37.
- The median values were: TL 10.3 ng/mL, eGFR 78, BUN 17 mg/dL, and Cr 0.3 mg/dL. For every 1 ng/mL increase in TL, there was a decrease in the simultaneous eGFR of 0.91 (95%CI: 0.36 - 1.46, p=0.001).
- For every 1 ng/mL increase in TL, there was an increase in the next recorded eGFR level by 0.78 (95%CI 0.51 - 1.32, p = 0.003).
- There was no association between TL and simultaneous or subsequent BUN or Cr. Figure 1 shows significant fluctuation in CysC/eGFR and minimal fluctuation in Cr in response to TL.

## Disclosure

I will not discuss off label use and/or investigational use of the any drugs/devices. *No authors have any financial disclosures.*

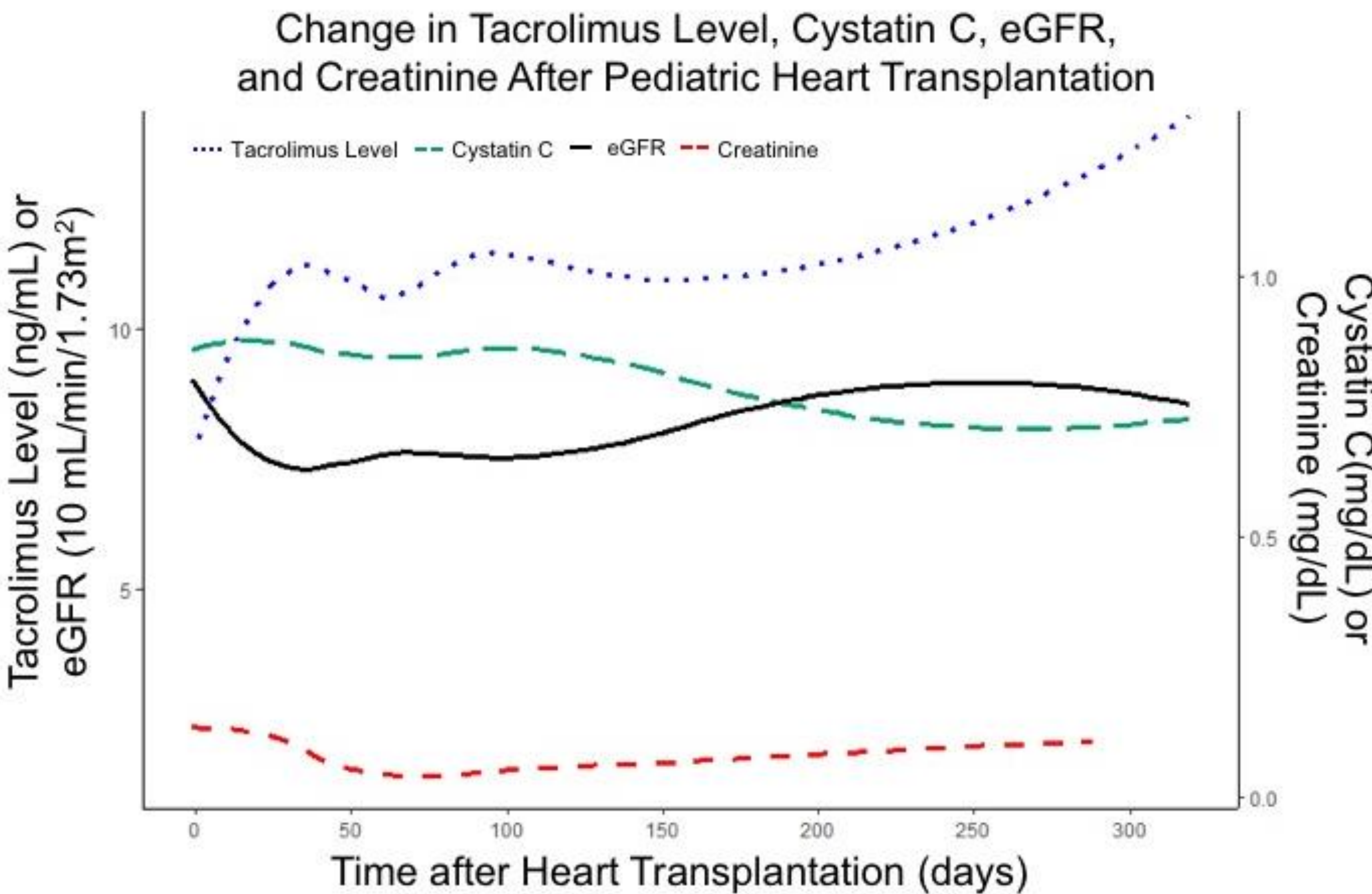


Figure 1: As time after transplantation increase, there is significant fluctuation in Cystatin C and eGFR with minimal fluctuation in Creatinine, in response to tacrolimus level.

## Conclusions

In this initial year of data at a new pediatric heart transplant center, the cohort displayed that an increase in TL was associated with a simultaneous decrease and a subsequent increase in eGFR, showing the sensitivity of eGFR to dose changes in Tac.

These data suggest that CysC and calculated eGFR may be a more sensitive marker of renal injury than BUN and Cr. More data are needed to evaluate long term renal injury prevention and rejection avoidance.

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