

## **Immune Monitoring in Pediatric Heart Transplantation: Correlation with Infection and Rejection**

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**Background.** The Cylex ImmuKnow assay is a commercially available test of immune response aimed at identifying solid organ transplant recipients at risk for either acute rejection or infection. The correlation between the Cylex assay (ng/mL ATP) values and rejection or infectious episodes in pediatric heart transplant (HTx) recipients was examined.

**Methods.** All children undergoing HTx at our center from the introduction of the Cylex assay (July 2007) and August 2010 for whom the assay was performed were reviewed. Patients younger than 12 years of age at the time Cylex assay was obtained were included in the study. The association of the Cylex assay levels with episodes of biopsy proven acute rejection or significant infections was determined.

**Results:** Among the 139 patients who underwent HTx at our center, the Cylex assay was determined in nine children (6 girls, 66%. Mean age at HTx  $8.4 \pm 5$  years ) at planned and unplanned in visits. There were 103 Cylex assays obtained (median of 8; range 3–28 per patient). There were 3 episodes of acute rejection in 3 patients and 10 infections in 5 patients. Cylex levels were significantly lower during an infectious episode compared to the Cylex levels at the quiescent phase:  $210 \pm 76$  vs.  $433 \pm 192$  ng/ml ( $p=0.001$ ). A trend towards higher Cylex levels was observed during an acute rejection as compared to the Cylex levels at the quiescent phase:  $583 \pm 306$  vs.  $433 \pm 192$  ng/ml ( $p = 0.076$ ). More predictive of infection or rejection is the change in the Cylex levels of an individual HTx recipient from his specific quiescence values than the absolute values compared to the "normalized universal values".

**Conclusions.** Our experience suggests that during infection and rejection episodes Cylex ImmuKnow assay levels are lower and higher compared to the quiescence state respectively. Monitoring pediatric HTx recipients with the Cylex ImmuKnow assay has the potential to identify patients at risk of developing significant infections or rejections.