

Immune Cell Function Testing During Rejection and Infection in Heart Transplant Recipients

Tuvia Ben Gal¹, Moshe Israeli², Victoria Yaari¹, Andrey Valdman¹, Israel Matz¹, Benjamin Medallion³, Alexander Yussim⁴, Alexander Battler¹, Benjamin Sredni⁵, Tirza Klein²

¹ *Cardiology Department, Heart failure unit,* ² *Tissue Typing Laboratory,* ³ *Cardiothoracic Surgery, Heart Transplant Unit,* ⁴ *Transplantation, Rabin Medical Center, Petah Tikva,* ⁵ *CAIR institute, Goodman faculty, Bar-Ilan University, Ramt Gan, Israel*

Introduction: The most commonly used immunosuppression monitoring strategies after heart transplantation (HTx) apply accepted target drug levels disregarding that the drug levels do not correlate: with the drug dose administered, with the individual patient's pharmacokinetics or with the proper immunosuppressive drug effect.

Aims: To examine the functional immunity, as measured by the Cylex immune assay, during rejection and infectious episodes in HTx recipients.

Methods: The functional immune response measured by the ImmuKnow assay (Cylex) was determined in 397 blood samples from 50 HTx recipients at the Rabin Medical Center between June 2007 and October 2008.

Results: The average Cylex assay in stable (who had no rejection and no infection) HTx recipients was 348±149 adenosine triphosphate (ATP) ng/ml (range 90 to 940 ATP ng/ml). There was no correlation between Cylex levels and the Calcineurin inhibitors trough levels. The Cylex level of 13 HTx patients who suffered from 21 infectious episodes was significantly lower at the time of infection as compared with the Cylex level at the stable state (147±92 vs. 324±76 ATP ng/ml, respectively, p<0.05). The Cylex level of 14 HTx patients who had 16 episodes of acute rejection > Grade 2 was significantly higher at the time of the rejection episode as compared with the Cylex level at the stable state (623±165 vs. 330±140 ATP ng/ml, respectively, p<0.05).

Conclusions: Cylex assay levels were higher in HTx recipients at the time of rejection and lower at the time of infection as compared with Cylex levels with no infection and no rejection.