POST-TRANSPLANT IMMUNE MONITORING

F. Baldanti [1], I. Cassaniti [2]

[1]*Department of Clinical, Surgical, Diagnostic and Pediatric Sciences, University of Pavia, Pavia*

[2]*Molecular Virology Unit, Microbiology and Virology Dept, IRCCS Policlinico San Matteo, Pavia*

Immunosuppressive drugs are essential for the success of transplant, although they are associated to higher risk of opportunistic infections (OIs) and community acquired infections (CAIs). In solid organ transplant recipients (SOTRs), OIs, mainly from Herpesviruses, are most frequently reported during the first six months post-transplant. Monitoring of opportunistic infections using real-time PCR represents the most common test used for the management of transplanted patients. Even though, the role of immune reconstitution is also critical.

In recent years there has been a growing interest in the development of new approaches for monitoring immune response, especially in high risk patients; non pathogen-specific and pathogen-specific approaches can be performed. Among non pathogen-specific methods, monitoring T-cell counts could represent a preliminary approach to stratify patients at high risk of OIs or CAIs. Indeed, it has been reported that SOTRs developing a nadir CD4+ T-cell count lower than 200 cells/µl showed a delayed and impaired immune recovery as well as an increased prevalence of infections than patients with nadir CD4+ T-cell count higher than 200 cells/µl.

Among assays that allow the quantification of IFN-γ producing T cells after antigen-specific stimulation, ELISPOT represents a useful and easy to perform approach to quantify responding T cells. Using appropriate peptide pools (15 amminoacids in length with an overlap of 11 amminacids) it is possible to stimulate both CD4+ and CD8+ T-cell response. One of the most important limitation is related to the experimental variability; thus, standardization and instrument set-up are necessary, especially between different laboratories. On the other hand, Quantiferon assays for CMV- and M. tuberculosis-specific T-cell immune response are well standardized and easier to perform. Even though, since they require the use of short peptides pools, only CD8+ T-cell response is stimulated.

CMV-specific T-cell response has been widely studied in SOTRs, showing that recipients with sufficient CMV-specific CD4+ and CD8+ T-cell response were protected from CMV reactivation. Furthermore, preliminary analysis from a bicentric longitudinal study performed on kidney transplant recipients showed that undetectable pre-transplant IE-1 specific T-cell response could be related to higher risk of developing CMV infections requiring pre-emptive therapy.

Overall, the identification of immunological markers of better prognosis in transplanted patients and the routinely introduction of immune-monitoring could be useful in order to stratify the risk infection among transplanted patients, allowing a personalization of diagnosis and therapy.