ABSTRACT

Transplantation is the best therapeutic solution for patients with chronic renal failure. Due to the great advances in immunosuppressive therapy in the last decades, graft and patient survival have improved significantly. On the other hand, immunosuppressive therapy has serious side effects – too strong immunosuppression may lead to infection or malignancies, conversely insufficient immunosuppression may lead to graft rejection. Due to the grave consequences of acute rejection, the main goal of cooperation of clinicians and transplant immunologists is to stratify patients into groups with low, moderate and high risk of rejection based on the evaluation of various immunologic risk factors. There are reports in the literature that the numbers (frequencies) of interferon gamma (IFNγ) producing cells before transplantation may be helpful to identify patients with high risk of acute cellular rejection and to predict long-term survival of the graft.

In this retrospective study we determined the pre-transplant frequencies of activated donor specific T lymphocytes producing IFNγ after short stimulation (24 hrs) by ELISpot (Enzyme-linked immunosorbent spot assay). The results were correlated with the incidence of acute cellular (ACR) and antibody-mediated (AMR) rejection and with other risk factors.

In our cohort of patients (n = 47) after kidney transplantation from living donors we did not find a significant correlation between the numbers of alloreactive cells before transplantation and the incidence of acute rejection (neither ACR nor AMR). Nevertheless, our data indicated higher frequencies of IFNγ producing cells in patients with ACR and AMR than in patients without rejection (98 ± 81 a 126 ± 81 vs. 72 ± 70 spots/50 000 mononuclear cells). This tendency was even stronger in patients with the serious form of ACR (grade II), (134 ± 95 vs. 72 ± 70 spots/50 000 mononuclear cells). We found also a positive correlation between the frequencies of IFNγ producing cells and the number of HLA (Human Leukocyte Antigens) mismatches between recipients and donors which confirms that the immune reaction is aimed mostly against mismatched HLA antigens of the donor.

In conclusion, our preliminary results indicate that the pre-transplant determination of the numbers of alloreactive cells by the ELISpot methodology might be useful and may provide important information about patient´s T cell immunity before kidney transplantation from living donors.

Key words

HLA antigens, kidney transplantation, acute rejection, ELISpot, interferon gamma.