Background:
We investigated the incidence of the CMV infection and immune response to it in patients after kidney transplantation. We determined the relative number of T cells producing intracellular IFN-γ after stimulation with CMV antigen (% CMV-specific T lymphocytes) and absolute number of CD4+, CD8+ and CD19+ (CD4+, CD8+, CD19+/ul) in CMV-positive (CMV+) and CMV negative (CMV-) patients before during and after transplantation.

Aim: Is it possible to predict higher risk of CMV infection, which may complicate the post-transplantation period, already before the transplantation?

Methods:
1) Intracellular production of IFN-γ by CMV-specific T cells was determined by flow cytometry after incubation of cells with CMV antigen using monoclonal antibodies a-IFN-γ, a-CD45 and a-CD4. 2) T lymphocytes CD4+, CD8+ and B lymphocytes CD19+ were determined by standard flow cytometry. 3) PCR method was used to detect CMV positivity or negativity. Patients: 21 patients, 16 men and 5 women, mean age 46.9 years. Patients were examined before and during 12 months after kidney transplantation. CMV positive group of patients was defined by at least one positive CMV PCR examination during 12 months period after transplantation. (CMV+, 7 patients, examinations were performed once a month.) CMV negative group was defined by negativity of all these examinations (CMV-, 14 patients).

Results:
I) Before transplantation: Mean absolute number of CD19+ cells in CMV positive patients was 183.3, in CMV negative 68.5, p = 0.0137.  
II) Before and during 12 months after transplantation: a) Mean number of CMV-specific T cells was in CMV positive 2,31 and in CMV negative 1,49, p = 0.0300 (Graph No 1). b) Mean absolute number of CD4+ was in CMV positive 1198,6, in CMV negative 1567,6, p = 0.0002 (Graph No 4).  
III) 5 months after transplantation: a) Mean absolute number of CD4+ cells in CMV positive patients was 291,8, in CMV negative 1017,7, p = 0.0045 (Graph No 2). b) Mean absolute number of CD8+ cells in CMV positive was 396,6, in CMV negative 686,0 p = 0.0610 (Graph No 3). Other measured values were not statistically significant.

Conclusion:
Significant differences of the numbers of T lymphocytes were observed in CMV positive and CMV negative patients after kidney transplantation, counts of both helper and cytotoxic T lymphocytes being lower in CMV positive patients in comparison with CMV negative patients. Numbers of CMV-specific T lymphocytes were higher in CMV positive patients compared to CMV negative patients in measurement performed during 12 months after transplantation.

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