Changes of T lymphocyte subsets after kidney transplantation according to induction immunosuppressants

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Background: The aim of this study is to investigate the change of T cell subsets during early post-transplant period according to the type of induction therapy (anti-thymocyte globulin [ATG] vs. basiliximab).

Methods: We conducted prospective observational study for 174 patients who underwent kidney transplantation and in Seoul St. Mary's Hospital from May 2018 to January 2020. A baseline blood sample was collected within 5 days before the kidney transplant, and additional blood samples were collected and analyzed at 4 weeks and 12 weeks after the kidney transplant. Flow cytometric study of peripheral blood mononuclear cells was performed using anti-CD3, -CD4, -CD57, -CD127, -CD161, -CD45RA, and -CCR7 in order to analyze T cell subsets. We compared the change of each T cell subsets between patients who took ATG (n=61) and basiliximab (n=113).

Results: At baseline, all of the CD4+ and CD8+ T cell subsets did not show significant differences. However, changing pattern of T cell subsets showed significant difference according to the type of induction therapy at 4 weeks and 12 weeks after kidney transplantation. In the ATG group, at 4 weeks, the expression of CD4+CD161+, CD4+CD25+CD127low, and CD8+CD45RA+CCR7- T cells increased, and CD8+CD28nullCD57+ T cells decreased. At week 12, CD4+CD161+, CD4+CD25+CD127low, CD8+CD45RA+CCR7-, CD8+CD45RA-CCR7- T cells significantly increased and CD8+CCR7+ T cells decreased. In basiliximab group, CD8+CCR7+ T cell expression decreased and CD8+CD45RA-CCR7- T cell increased at 12 weeks compared to baseline.

Conclusions: In this study, we observed CD4+CD161+ and CD4+CD25+CD127low T cells activation and increase of CD8+CD45RA+CCR7- T cells in patients with ATG induction in comparison with basiliximab. The correlation between T cell subset changes and clinical outcome could not be confirmed in our study. Further long-term study is required to determine the effect of T cell subsets changes on clinical outcomes.

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