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Changing Patterns of T Lymphocyte Subsets after Kidney Transplantation according to Induction Immunosuppressant: Single Center Prospective Observational Study

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Objectives: The aim of this study is to investigate the changing patterns 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 157 patients who underwent kidney transplantation and in Seoul St. Mary's Hospital from May 2018 to November 2020. A baseline blood sample was collected within 5 days before the kidney transplant, and additional blood samples were collected and analyzed at 4 and 12 weeks after the kidney transplant. We compared the change of each T cell subsets between patients who took ATG (n=62) and basiliximab (n=95) using flow cytometric study of peripheral blood mononuclear cells.

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 KT.

In the ATG group, a significant decrease in CD4+ T cells was observed from week 4 and continued until week 12. CD8+ T cells showed no change until week 4, but increased at week 12. A significant increase in the CD4+CD161+ and CD8+CCR7-CD45RA+ T cell subsets was observed at 4 and 12 weeks in the ATG group, and CD8+CCR7+ T cell subset decreased. CD8+CD28nullCD57+ T cell was decreased at 4 weeks and recovered to baseline levels at 12 weeks.

In Basiliximab group, CD8+CCR7+ T cell expression was decreased and CD8+CCR7- CD45RA+ T cell expression was increased at 12 weeks compared to baseline.

Conclusions: In this study, we observed CD4+CD161+ and CD8+CCR7-CD45RA+ T cells activation 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.