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PATIENTS WITH END STAGE RENAL DISEASE SHOW REDUCED ABILITY TO RESPOND AGAINST BOTH NEW AND RECALL ANTIGENS

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Patients with End Stage Renal Disease (ESRD) show immunosenescence secondary to the renal dysfunction. To analyse the relationship between this process and the ability to respond to new or recall antigens we studied the cellular memory generated against both the SARS-CoV-2 new vaccine, and the seasonal Influenza vaccine (InV).

We analysed 48 ESRD patients on dialysis (ESRD; age: 67,3 ± 14,9) and 51 healthy donors (HD; age: 68,7 ± 13,8). Donors were studied a month after receiving the first complete scheme of RNA-based SARS-CoV-2 vaccine, and previously (eleven months after InV season 19-20: InV-t0) and one month after receiving InV season 20-21 (InV-t1). Differentiated degree of $CD4^+$ and $CD8^+$ T lymphocyte subpopulations were evaluated by flow cytometry in peripheral blood (CD45RA/CCR7). Specific memory T-lymphocytes to SARS-CoV-2 and Influenza vaccines were quantifying using IFN-γ-Enzyme-Linked ImmunoSpot Assay (ELISpot).

ESRD patients presented higher percentages of highly differentiated subpopulations effector memory (EM) and EMRA and lower naïve than HD in both, $CD4^+$ and $CD8^+$ T lymphocytes ($p<0.001$). We found significant differences between ESRD and HD in the cellular immune responses against both SARS-CoV-2 vaccine ($p<0.001$) and InV-t1 ($p<0.001$), nevertheless there were not significant differences between of ESRD and HD in InV-t0. The immune response in ESRD patients against the SARS-CoV-2 vaccine correlated positively with naïve and negatively with EM $CD4^+$ T lymphocytes, while we found a negative correlation between InV-t0 and EMRA $CD4^+$ T lymphocytes ($p<0.05$). We did not find any association between memory to InV-t1 and T lymphocyte subpopulations.

Our results support that immunosenescence in patients with ESRD may influence the ability to generate immune responses against both new and recall antigens. These two kinds of responses are related to differentiation degree of T lymphocyte subpopulations.