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SPECIFIC CELLULAR RESPONSE AGAINST THREE DIFFERENT MODELS OF VIRAL ANTIGENS IN ELDERLY IMMUNOCOMPETENT INDIVIDUALS

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T-lymphocytes have a crucial role controlling viral infections. CMV chronic infection, seasonal H1N1 influenza and the novel SARS-COV2 infection represent three distinct models of inducing viral immune memory. The aim of this work was to characterise the specific cellular responses against these three different viruses in 59 individuals aged over 60 years. They had overcome SARS-CoV-2 infection asymptomatically or with very mild symptoms. We characterized T subpopulations by flow cytometry. Specific memory T-lymphocytes against these three viruses were measured by IFN-ɣ released by ELISpot. Responses to chronic CMV infection among CMV seropositive individuals showed negative correlation with naïve CD8+ and with naïve and the less differentiated effector memory EM1 CD4+ T-lymphocytes. Positive correlation was only observed with the highly differentiated subpopulation EMRA CD4+ ($p.value<0.05$). On the contrary, Influenza responses among individuals recently vaccinated, but with probable numerous encounters with the virus throughout life, correlated negatively with highly differentiated EM3 CD4+ and EMRA CD8+ and positively with EM1 CD4+ ($p.value<0.05$). Similarly, responses against the new and unique infection with SARS-COV-2 showed negative correlation with EMRA CD8+ and positive correlation with naïve CD8+ ($p.value<0.05$). In fact, the ability to develop specific cellular responses against influenza and SARS-CoV2 in the influenza vaccinated group correlated positively. There was no significant correlation between the responses against SARS-CoV-2 and CMV virus although SARS-CoV2 responses were lower in CMV seropositive than in CMV seronegative patients. Our results suggest that specific cellular response against novel pathogens resembles the memory response enhanced by repeated but not chronic virus encounters. Both may be favoured by a more naïve T-lymphocyte phenotype comparing with the immunosenescence induced by chronic CMV infection. Moreover, subpopulation distribution and antigen-specificity of T-lymphocyte subpopulations could be good biomarkers of the immunocompetent status in elderly individuals, reflecting their ability to generate specific memory responses against new pathogens.