

Supplementary Material

Response to anti-SARS-CoV-2 mRNA vaccines in multiple myeloma and chronic lymphocytic leukemia patients

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1. Supplementary Materials & Methods

Dextramer staining

To evaluate cytotoxic T cell response, PBMCs from HLA-A*0201 positive CLL and MM patients were analyzed using dextramer staining with the most common SARS-CoV-2 specific epitope - HLA-A*0201/YLQPRTFLL (Immudex). Peripheral blood mononuclear cells were isolated by Biocoll density gradient centrifugation (Biochrom). Next, 1×10^6 cells were incubated with $5 \mu\text{l}$ of anti-HLA-A2 FITC for 15 min at room temperature in the dark and assessed by BD FACSLyric. Next, only from HLA-A2 positive samples $1-3 \times 10^6$ cells were incubated with $1 \mu\text{l}$ of Fixable Viability Stain 700 (BD Biosciences) at room temperature for 15 min in the dark. Further, $10 \mu\text{l}$ of dextramer HLA-A*0201/YLQPRTFLL-specific-phycoerythrin (PE, Immudex, Copenhagen, Denmark) conjugated complex was added to cells and incubated at room temperature for 10 min in the dark. Next, anti-CD3 BV510, anti-CD4 APC-Cy7, anti-CD8 Percp-Cy 5.5, anti-CD45RA BV421, anti-CCR7 FITC, anti-CD27 APC, and anti-CD28 Pe-Cy7 (all BD Biosciences) were added to cells and incubated for 20 min at 4°C in the dark. Cells were analyzed using BD FACS Suite (BD FACSLyric). Results were compared to isotypic controls and fluorescence minus one control (FMOC), with the exclusion of dead cells to characterize naïve (CD45RA+CCR7+), central memory (CD45RA-CCR7+), effector memory (CD45RA-CCR7-), and terminally differentiated effector memory (CD45RA+CCR7-) phenotype of specific cytotoxic T cells.

Supplementary Table 1. Total neutralizing anti-RBD antibodies levels by treatment protocols in vaccinated CLL patients

Type of treatment	CLL Patients	Median OD Values		
		Baseline	2-5 weeks	12 weeks
Anti-CD20 mAb combined	29	0.091	0.097	1.668
BTKi/ BTKi + Anti-CD20	8	0.106	0.107	2.052
BCL2/BCL2 + Anti-CD20 mAb	8	0.092	0.065	0.667
BTKi + BCL2	2	0.085	0.068	0.160
Alkylating agents /Purine analogs	2	0.060	no data	3.587
Immunochemotherapy	22	0.089	0.111	1.668
PI3K inhibitor	1	2.888	2.112	3.400
No specified	5			

Supplementary Table 2. Total neutralizing anti-RBD antibodies levels by treatment protocols in vaccinated MM patients

Type of treatment	MM Patients	Median OD Values		
		Baseline	2-5 weeks	12 weeks
Immunomodulatory drugs +/- Proteasome inhibitors	33	0.081	1.339	3.327
Proteasome inhibitors	5	0.075	2.999	3.327
Anti-CD38 mAb in combination	4	0.099	0.344	2.419
No specified	6			