

**Supplementary Table S1.** Detailed patient characteristics at baseline, during anti-PD-1/PD-L1 therapy, and follow-up.

Pat ID	Age (years) at baseline	Sex	ECOG at baseline	Immuno-suppression	Serum LDH at baseline	Serum CRP at baseline	neutro lympho ratio at baseline	Localisation of primary	M stage at therapy start	Organs involved	MCPyV status (tumor)	PD-L1 expression (tumor)	Previous chemotherapy	Previous radio-therapy	Immune Checkpoint Inhibitors	Best Response	Trial of participation	Year of treatment
1	86	M	0	No	normal	elevated	≥4	head + neck	M0	1	nd	nd	No	No	Avelumab	PD	No	2018
2	81	M	1	Yes (CLL; Prostate Cancer)	elevated	elevated	nd	extremities	M1a	2	positive	negative	No	No	Avelumab	PD	No	2018
3	79	F	1	No	normal	normal	<4	head + neck	M1c	1	positive	negative	Yes	Yes	Pembrolizumab	PD	No	2016
4	70	M	1	No	elevated	elevated	<4	extremities	M0	2	positive	nd	No	No	Avelumab	PD	No	2019
5	83	M	1	No	normal	normal	<4	head + neck	M1a	2	negative	positive	No	No	Avelumab	PD	No	2018
6	68	F	1	Yes (azathioprine, corticosteroids (rheumatoid arthritis, systemic lupus erythematoses, Hashimoto thyroiditis))	elevated	normal	≥4	extremities	M1c	2	positive	negative	No	Yes	Avelumab	PD	No	2017
7	66	M	0	No	normal	elevated	<4	trunk	M1a	1	nd	nd	No	No	Avelumab	PD	Yes	2017
8	62	M	0	No	elevated	normal	<4	unknown	M0	1	positive	positive	No	No	Avelumab	PD	Yes	2017
9	76	M	1	No	elevated	elevated	≥4	unknown	M1a	1	nd	nd	Yes	No	Avelumab	PD	Yes	2015
10	71	F	4	Yes (tacrolimus, corticosteroids (kidney transplantation))	elevated	elevated	<4	head + neck	M1c	2	negative	positive	No	No	Nivolumab	PD		2015
11	76	F	0	No	normal	nd	≥4	trunk	M1c	3	nd	nd	No	Yes	Pembrolizumab	PD	No	2017
12	75	M	1	Yes (CLL)	normal	nd	nd	unknown	M1b	2	positive	nd	No	No	Pembrolizumab	PD	No	2018
13	77	F	1	No	elevated	nd	nd	unknown	M1b	2	nd	nd	No	No	Pembrolizumab	PD	Yes	2019
14	86	M	0	No	elevated	nd	nd	unknown	M1c	3	nd	nd	No	No	Pembrolizumab	PD	Yes	2019
15	67	F	1	No	elevated	elevated	≥4	head + neck	M1a	1	positive	positive	No	Yes	Pembrolizumab	PD	No	2016
16	66	F	1	No	elevated	elevated	<4	unknown	M0	2	nd	nd	Yes	Yes	Pembrolizumab	PD	No	2016
17	72	M	1	No	elevated	elevated	<4	extremities	M1a	1	positive	negative	Yes	Yes	Pembrolizumab	PD	No	2016
18	62	M	0	No	elevated	elevated	≥4	extremities	M1c	2	nd	nd	No	Yes	Avelumab	PD	Yes	2016
19	79	M	0	No	elevated	elevated	<4	trunk	M1c	3	nd	nd	No	No	Avelumab	PD	No	2018
20	68	M	1	Yes (azathioprine (myasthenia gravis))	elevated	elevated	nd	head + neck	M0	1	positive	negative	No	Yes	Nivolumab	PD	No	2017
21	64	M	0	Yes (NH-Lymphom)	normal	nd	<4	extremities	M1c	4	nd	nd	No	Yes	Avelumab	PD	No	2018
22	77	M	0	Yes (CLL)	elevated	normal	<4	extremities	M1a	1	nd	nd	No	No	Avelumab	PD	No	2019

23	83	M	1	No	elevated	elevated	≥4	extremities	M0	1	nd	nd	Yes	No	Avelumab	PD	Yes	2015
24	75	M	2	No	normal	elevated	≥4	extremities	M1c	2	negative	nd	No	Yes	Avelumab	PD	No	2018
25	56	M	1	No	normal	nd	<4	extremities	M1a	2	nd	nd	No	Yes	Pembrolizumab	PD	No	2016
26	74	M	0	No	elevated	elevated	≥4	extremities	M1c	5	nd	nd	Yes	Yes	Avelumab	PD	Yes	2015
27	75	F	1	No	elevated	normal	≥4	unknown	M1a	1	positive	negative	Yes	No	Pembrolizumab	PD	No	2016
28	82	F	1	No	elevated	normal	<4	extremities	M1a	2	nd	positive	No	Yes	Avelumab	PD	No	2018
29	83	M	3	No	elevated	elevated	≥4	unknown	M1c	2	nd	nd	No	Yes	Avelumab	PD	No	2019
30	59	M	0	Yes (CLL)	normal	normal	<4	extremities	M1a	2	positive	positive	No	No	Nivolumab	PD	No	2017
31	66	F	2	No	elevated	elevated	<4	trunk	M1a	1	nd	nd	No	No	Avelumab	PD	Yes	2017
32	56	F	0	No	elevated	normal	<4	extremities	M1c	3	nd	nd	No	Yes	Avelumab	PD	Yes	2016
33	78	F	0	No	nd	nd	nd	trunk	M1c	3	nd	nd	Yes	Yes	Avelumab	PD	No	2017
34	37	M	0	No	normal	elevated	<4	trunk	M1b	2	nd	positive	Yes	Yes	Avelumab	PD	Yes	2015
35	85	M	1	No	elevated	elevated	<4	extremities	M1c	4	positive	positive	No	No	Pembrolizumab	PD	No	2017
36	66	M	1	Yes (CLL)	elevated	elevated	nd	trunk	M1a	1	negative	positive	No	No	Pembrolizumab	PD	No	2018
37	53	M	1	Yes (MTX in clippers syndrome and steroids)	elevated	elevated	≥4	extremities	M1c	3	nd	nd	No	Yes	Avelumab	PD	No	2018
38	80	M	0	No	elevated	elevated	≥4	unknown	M1c	2	nd	nd	No	Yes	Avelumab	PD	Yes	2017
39	80	M	0	Yes (rheumatoid arthritis (until 11/2016 MTX + Ankinra, prednisolone 5mg daily))	elevated	elevated	≥4	head + neck	M1c	5	nd	nd	Yes	Yes	Pembrolizumab	PD		2016
40	69	M	0	Yes (CML, osteomyelofibrosis)	elevated	elevated	≥4	extremities	M1c	2	nd	nd	No	No	Avelumab	PD		2017
41	68	M	0	Yes (CLL)	elevated	elevated	nd	unknown	M1a	1	nd	nd	Yes	No	Pembrolizumab	SD	No	2017
42	77	M	1	Yes (CLL, melanoma)	normal	elevated	≥4	head + neck	M1c	1	negative	positive	Yes	Yes	Pembrolizumab	SD	No	2016
43	75	M	0	No	elevated	elevated	<4	extremities	M0	1	nd	nd	Yes	No	Avelumab	SD	No	2018
44	78	M	1	No	elevated	elevated	<4	extremities	M1c	3	nd	negative	Yes	No	Avelumab	SD	Yes	2015
45	48	F	0	No	normal	normal	<4	unknown	M1a	1	positive	positive	Yes	Yes	Pembrolizumab	SD	No	2017
46	76	M	0	No	normal	normal	<4	head + neck	M1c	3	negative	positive	No	No	Avelumab	SD	No	2018
47	72	F	0	No	elevated	elevated	≥4	head + neck	M1a	1	positive	negative	Yes	Yes	Nivolumab	SD	Yes	2015
48	60	F	0	No	normal	nd	<4	extremities	M1c	4	nd	nd	No	No	Avelumab	SD	No	2019
49	83	M	1	No	elevated	elevated	<4	unknown	M1c	4	nd	nd	Yes	Yes	Pembrolizumab	SD	No	2014
50	82	M	0	No	normal	elevated	<4	head + neck	M0	1	nd	nd	Yes	No	Avelumab	SD	Yes	2016

51	63	M	0	No	elevated	nd	<4	extremities	M1c	4	nd	nd	No	Yes	Avelumab	SD	No	2018
52	90	F	2	No	elevated	elevated	nd	head + neck	M0	1	nd	nd	No	No	Avelumab	SD	No	2017
53	80	F	0	Yes (non-Hodgkin lymphoma (cyclophosphamide, doxorubicine, vincristine, prednisone); anal carcinoma)	normal	normal	<4	head + neck	M1c	2	negative	negative	No	No	Nivolumab	SD	No	2017
54	78	M	0	Yes (CLL, melanoma)	elevated	normal	<4	extremities	M1c	2	positive	nd	No	Yes	Pembrolizumab	SD	No	2017
55	79	M	0	No	elevated	elevated	≥4	extremities	M1c	3	nd	nd	No	Yes	Pembrolizumab	SD		2017
56	83	F	1	Yes (multiple myeloma, polycythemia vera)	elevated	elevated	<4	extremities	M1c	2	nd	nd	No	Yes	Avelumab	SD		2017
57	73	M	1	No	elevated	elevated	≥4	trunk	M1c	4	negative	positive	Yes	Yes	Avelumab	SD	Yes	2016
58	68	M	0	No	normal	nd	<4	unknown	M1a	1	nd	nd	No	No	Avelumab	SD	No	2018
59	70	M	0	No	elevated	elevated	<4	extremities	M1a	1	positive	positive	Yes	Yes	Pembrolizumab	SD	No	2016
60	69	F	2	No	normal	normal	<4	head + neck	M1c	2	nd	nd	No	No	Avelumab	SD	No	2018
61	82	M	1	No	normal	nd	<4	head + neck	M1c	3	nd	nd	No	No	Avelumab	PR	No	2017
62	86	M	nd	No	normal	normal	<4	extremities	M0	1	nd	nd	No	No	Avelumab	PR	No	2018
63	71	M	0	No	elevated	normal	<4	extremities	M1a	2	positive	positive	No	Yes	Pembrolizumab	PR	No	2017
64	89	M	0	Yes (non-small cell lung cancer; prostate cancer )	normal	normal	<4	trunk	M1c	3	positive	negative	No	Yes	Pembrolizumab	PR	No	2017
65	65	M	0	No	normal	nd	<4	extremities	M1a	1	positive	negative	No	Yes	Nivolumab	PR	Yes	2016
66	73	M	0	No	normal	normal	≥4	extremities	M1a	1	nd	nd	No	Yes	Nivolumab	PR	No	2015
67	90	M	1	No	elevated	elevated	≥4	head + neck	M1c	2	nd	nd	No	Yes	Pembrolizumab	PR		2017
68	74	M	1	No	elevated	elevated	≥4	extremities	M1c	2	positive	negative	Yes	Yes	Pembrolizumab	PR	No	2015
69	57	F	0	No	normal	normal	<4	extremities	M1a	1	nd	nd	No	No	Avelumab	PR	No	2018
70	68	M	0	No	normal	normal	≥4	head + neck	M1c	3	negative	negative	Yes	No	Avelumab	PR	Yes	2015
71	59	M	0	no	normal	nd	nd	unknown	M1b	3	nd	nd	Yes	Yes	Pembrolizumab	PR	No	2017
72	55	M	0	No	elevated	elevated	≥4	unknown	M1c	2	nd	nd	No	Yes	Pembrolizumab	PR	No	2016
73	85	M	0	No	elevated	nd	<4	trunk	M1c	1	nd	nd	No	Yes	Pembrolizumab	PR	No	2016
74	76	M	0	No	elevated	elevated	<4	extremities	M1c	2	nd	positive	Yes	No	Pembrolizumab	PR	No	2015
75	86	M	1	No	elevated	elevated	≥4	trunk	M1c	2	positive	positive	No	No	Pembrolizumab	PR		2017

76	84	M	1	No	elevated	normal	≥4	trunk	M1c	4	positive	positive	No	Yes	Avelumab	PR	No	2018
77	61	M	0	No	elevated	normal	<4	head + neck	M1c	3	nd	nd	No	Yes	Avelumab	PR	Yes	2016
78	76	M	0	No	normal	elevated	<4	unknown	M1a	1	nd	nd	No	Yes	Pembrolizumab	PR		2017
79	48	M	1	Yes (promyelocytic leukemia)	elevated	elevated	<4	trunk	M0	1	positive	negative	No	Yes	Avelumab	PR	No	2018
80	85	M	1	No	elevated	nd	nd	unknown	M1c	3	positive	nd	No	Yes	Pembrolizumab	PR	Yes	2019
81	50	M	1	No	elevated	elevated	≥4	extremities	M0	1	positive	positive	Yes	No	Nivolumab	PR	No	2016
82	71	F	1	No	normal	nd	nd	unknown	M1a	1	nd	nd	No	No	Pembrolizumab	PR	Yes	2019
83	52	M	0	No	elevated	elevated	≥4	trunk	M1a	1	nd	nd	No	Yes	Avelumab	PR	No	2018
84	82	M	1	Yes (renal cell carcinoma, urothelial carcinoma)	elevated	elevated	<4	extremities	M1a	1	nd	negative	No	Yes	Avelumab	PR		2018
85	76	M	1	Yes (CLL)	nd	nd	nd	unknown	M1a	1	nd	nd	Yes	No	Nivolumab	PR	No	2016
86	82	F	2	No	elevated	nd	nd	unknown	M1c	3	nd	nd	No	No	Pembrolizumab	PR	No	2017
87	82	M	0	No	elevated	nd	nd	unknown	M1c	2	positive	nd	No	No	Pembrolizumab	PR	No	2019
88	77	M	0	No	normal	elevated	≥4	head + neck	M1c	1	nd	nd	No	Yes	Pembrolizumab	PR		2016
89	75	F	1	No	elevated	elevated	≥4	extremities	M1b	1	nd	nd	No	No	Avelumab	PR		2018
90	87	M	1	No	elevated	elevated	<4	extremities	M0	1	nd	nd	No	No	Avelumab	PR	No	2017
91	65	M	0	No	normal	normal	<4	head + neck	M1c	1	nd	nd	No	No	Avelumab	CR	Yes	2017
92	59	M	1	No	normal	normal	<4	unknown	M1c	2	nd	positive	Yes	Yes	Pembrolizumab	CR	No	2016
93	96	M	1	No	normal	nd	≥4	trunk	M0	1	nd	nd	No	No	Avelumab	CR	No	2018
94	64	M	0	No	normal	elevated	<4	trunk	M1c	1	nd	nd	No	Yes	Pembrolizumab	CR	No	2016
95	61	F	0	Yes (azathioprine (myasthenia gravis))	elevated	elevated	<4	trunk	M1c	1	nd	nd	No	Yes	Pembrolizumab	CR	No	2016
96	69	M	1	No	elevated	normal	<4	extremities	M1a	2	positive	negative	Yes	Yes	Avelumab	CR	Yes	2016
97	79	M	0	No	elevated	normal	≥4	extremities	M1a	1	nd	nd	No	Yes	Nivolumab	CR	Yes	2016
98	57	F	0	No	normal	nd	≥4	unknown	M1c	3	positive	negative	No	Yes	Nivolumab	CR	Yes	2015
99	76	M	0	No	elevated	elevated	<4	extremities	M1a	1	negative	nd	No	No	Pembrolizumab	CR	No	2017
100	72	F	0	No	normal	elevated	≥4	extremities	M1a	1	nd	positive	Yes	Yes	Avelumab	CR	No	2017
101	71	M	0	No	normal	normal	<4	extremities	M0	2	nd	nd	No	Yes	Avelumab	CR	No	2018
102	79	F	0	No	elevated	normal	<4	trunk	M1a	2	positive	nd	No	Yes	Avelumab	CR	Yes	2016
103	83	F	1	No	elevated	elevated	≥4	unknown	M1a	2	nd	nd	No	No	Pembrolizumab	CR		2017
104	80	M	0	No	normal	normal	<4	head + neck	M1c	1	nd	nd	No	Yes	Avelumab	CR		2017

105	60	M	0	No	elevated	elevated	nd	extremities	M1c	5	nd	nd	Yes	Yes	Pembrolizumab	CR	No	2016
106	82	F	0	No	nd	nd	nd	extremities	M1c	2	nd	nd	No	No	Avelumab	CR	No	2018
107	62	M	0	No	normal	nd	nd	extremities	M1c	1	nd	nd	No	No	Pembrolizumab	CR	No	2016
108	75	F	1	No	normal	nd	nd	head + neck	M1c	2	nd	nd	Yes	No	Pembrolizumab	CR	No	2017
109	83	F	0	No	normal	nd	nd	head + neck	M0	1	nd	nd	No	No	Avelumab	CR	No	2018
110	83	M	0	No	normal	normal	nd	head + neck	M0	1	nd	nd	No	No	Avelumab	CR	No	2018
111	79	M	0	No	nd	nd	nd	trunk	M1a	1	nd	nd	No	Yes	Avelumab	CR	No	2017
112	77	M	0	No	elevated	nd	nd	unknown	M1c	2	positive	nd	No	No	Nivolumab	CR	No	2016
113	77	F	0	No	elevated	nd	nd	unknown	M1a	1	positive	nd	No	No	Pembrolizumab	CR	No	2017
114	64	M	0	No	normal	nd	nd	unknown	M1a	1	positive	nd	No	No	Nivolumab	CR	No	2017

Characteristics of total patient cohort (n=118). Best response is related to the anti-PD-1/PD-L1 therapy. Patients are sorted according to their change in sum of longest diameters of target lesions from baseline to best response (see **Figure 1**). Abbreviations: M – male; F – female; CLL – chronic lymphocytic leukemia; CML – chronic myelogenous leukemia; CR – complete response, PR – partial response; SD – stable disease; PD – progressive disease; nd – no data available.