

Table S1. Clinical and pathologic characteristics of patients according to immune check point expression

Characteristics	tPD-L1 expression			sPD-L1 expression			PD-1 expression		
	Low	High	<i>P</i> -value	Low	High	<i>P</i> -value	Low	High	<i>P</i> -value
No. of patients	127	91		148	70		149	69	
Gender			0.492			0.012			0.269
Male	91	69		101	59		106	54	
Female	36	22		47	11		43	15	
Age			0.037			0.909			0.234
≤59 years	53	51		71	33		67	37	
>59 years	74	40		77	37		82	32	
Histologic type			0.000			0.036			0.362
Clear cell type	119	68		132	55		130	57	
Non-clear cell type	8	23		16	15		19	12	
Tumor nucleus grade			0.002			0.042			0.006
2	75	34		81	28		84	25	
3+4	52	57		67	42		65	44	
Initial TNM stage			0.050			0.107			0.766
Stage I+ II	77	43		87	33		81	39	
Stage III+ IV	50	48		61	37		68	30	
Pulmonary metastasis			0.267			0.759			0.861
Present	82	52		92	42		91	43	
Absent	45	39		56	28		58	26	
Clinical responses			0.119			0.300			0.926
PR	22	26		33	15		32	16	
SD	68	45		72	41		77	36	
PD	37	20		43	14		40	17	
Metastatic organ number			0.188			0.863			0.559
1	89	56		99	46		101	44	
≥2	38	35		49	24		48	25	
Tumor necrosis			0.057			0.274			0.230
Present	36	37		46	27		46	27	
Absent	91	54		102	43		103	43	
IMDC			0.074			0.483			0.342
Favorable	27	10		28	9		28	9	
Intermediate	82	61		96	47		93	50	
Poor	18	20		24	14		28	10	
Tumor size			0.738			0.861			0.833
≤4 cm	23	12		24	11		22	13	
>4 and ≤7 cm	53	41		61	33		65	29	
>7 and ≤10 cm	35	24		42	17		40	19	
>10 cm	16	14		21	9		22	8	
Systemic therapy			0.232			0.417			0.068
Sunitinib	80	50		91	39		95	35	
Sorafenib	47	41		57	31		54	34	

CD4			<0.001			0.001		0.002
Low	70	26		77	19		76	20
High	57	65		71	51		73	49
tPD-L1						<0.001		<0.001
Negative				106	21		102	25
Positive				42	49		47	44
sPD-L1			<0.001					<0.001
Negative	106	42					114	34
Positive	21	49					35	35
PD-1			<0.001			<0.001		
Low	102	47		114	35			
High	25	44		34	35			
Treg			<0.001			<0.001		<0.001
Low	101	39		113	27		108	32
High	26	52		35	43		41	37
CD8			0.281			0.111		0.003
Low	61	37		72	26		77	21
High	66	54		76	44		72	48
IS			<0.001			<0.001		<0.001
Low	80	4		82	2		72	12
Intermediate	46	47		61	32		55	38
High	1	40		5	36		22	19

Abbreviations: PR, partial response; SD, stable disease; PD, progressive disease; tPD-L1, tumor cells PD-L1 expressions; sPD-L1, stromal immune cells PD-L1 expressions; IMDC, International Metastatic Renal Cancer Database Consortium; IS, Immunoscore.

Table S2. Clinical and pathologic characteristics of patients according to TIL expression

Characteristics	CD8			CD4			Treg		
	Low	High	<i>P</i> -value	Low	High	<i>P</i> -value	Low	High	<i>P</i> -value
No. of patients	98	120		96	122		140	78	
Gender			0.741			0.169			0.005
Male	73	87		66	94		94	66	
Female	25	33		30	28		46	12	
Age			0.453			0.063			0.102
≤59 years	44	60		39	65		61	43	
>59 years	54	60		57	57		79	35	
Histologic type			0.252			0.300			0.047
Clear cell type	87	100		85	102		125	62	
Non-clear cell type	11	20		11	20		15	16	
Tumor nucleus grade			0.785			0.029			0.011
2	48	61		56	53		79	30	
3+4	50	59		40	69		61	48	
Initial TNM stage			0.403			0.050			0.582
Stage I+ II	57	63		60	60		79	41	
Stage III+ IV	41	57		36	62		61	37	
Pulmonary metastasis			0.293			0.012			0.393
Present	64	70		68	66		89	45	
Absent	34	50		28	56		51	33	
Clinical responses			0.976			0.454			0.472
PR	22	26		19	29		33	15	
SD	50	63		48	65		74	39	
PD	26	31		29	28		33	24	
Metastatic organ number			0.814			0.535			0.350
1	66	79		66	79		90	55	
≥2	32	41		30	43		50	23	
Tumor necrosis			0.958			0.076			0.039
Present	33	40		26	47		40	33	
Absent	65	80		70	75		100	45	
IMDC			0.991			0.050			0.380
Favorable	17	20		23	14		24	13	
Intermediate	64	79		57	86		88	55	
Poor	17	21		16	22		28	10	
Tumor size			0.178			0.299			0.780
≤4 cm	20	15		20	15		25	10	
>4 and ≤7 cm	45	49		38	56		60	34	
>7 and ≤10 cm	23	36		27	32		37	22	
>10 cm	10	20		11	19		18	12	
Systemic therapy			0.036			0.003			0.061
Sunitinib	66	64		68	62		90	40	
Sorafenib	32	56		28	60		50	38	

tPD-L1			0.281			<0.001		<0.001
Negative	61	66		70	57		101	26
Positive	37	54		26	65		39	52
sPD-L1			0.111			0.001		<0.001
Negative	72	76		77	71		113	35
Positive	26	44		19	51		27	43
PD-1			0.003			0.002		<0.001
Low	77	72		76	73		108	41
High	21	48		20	49		32	37
Treg			0.045			0.036		
Low	70	70		69	71			
High	28	50		27	51			
CD4			<0.001					0.036
Low	67	29					69	27
High	31	91					71	51
CD8						<0.001		0.045
Low				67	31		70	28
High				29	91		70	50
IS			0.886			<0.001		<0.001
Low	36	48		57	27		76	8
Intermediate	43	50		32	61		58	35
High	19	22		7	34		6	35

Abbreviations: PR, partial response; SD, stable disease; PD, progressive disease; tPD-L1, tumor cells PD-L1 expressions; sPD-L1, stromal immune cells PD-L1 expressions; IMDC, International Metastatic Renal Cancer Database Consortium; IS, Immunoscore.

Table S3. Clinical and pathologic characteristics of patients according to IS groups

Characteristics	Low	Intermediate	High	P value
No. of patients	84	93	41	
Gender				0.068
Male	59	65	36	
Female	25	28	5	
Age				0.205
≤59 years	35	45	24	
>59 years	49	48	17	
Histologic type				0.097
Clear cell type	77	78	32	
Non-clear cell type	7	15	9	
Tumor nucleus grade				<0.001
2	59	36	14	
3+4	25	57	27	
Initial TNM stage				0.010
Stage I+ II	56	48	16	
Stage III+ IV	28	45	25	
Pulmonary metastasis				0.443
Present	55	57	22	
Absent	29	36	19	
Clinical responses				0.854
PR	18	21	9	
SD	43	46	24	
PD	23	26	8	
Metastatic organ number				0.136
1	60	55	30	
≥2	24	38	11	
Tumor necrosis				0.022
Present	19	36	18	
Absent	65	57	23	
Tumor size				0.678
≤4 cm	18	12	5	
>4 and ≤7 cm	32	43	19	
>7 and ≤10 cm	24	25	10	
>10 cm	10	13	7	
Systemic therapy				0.129
Sunitinib	57	52	21	
Sorafenib	27	41	20	
IMDC				<0.001
Favorable	29	7	1	
Intermediate	52	65	26	
Poor	3	21	14	

Abbreviations: PR, partial response; SD, stable disease; PD, progressive disease; IMDC, International Metastatic Renal Cancer Database Consortium; IS, Immunoscore.