

P2.247:Prognostic Role of PD-L1 SP142 Immune Cell (IC) for First-Line ICI-containing therapy in Non-Small Cell Lung Cancer (NSCLC)

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PD-L1 SP142

PD-L1 SP142 is a PD-L1 assay used as a companion diagnostic for atezolizumab. SP142 uniquely assesses not only TC but also IC.

TC (Tumor Cell)

As with other (e.g., 22C3), SP142 assesses PD-L1 expression on tumor cells themselves. SP142 TC staining is weaker and has lower sensitivity than 22C3 TPS.

IC (tumor-infiltrating immune cell)

Evaluates PD-L1 expression on tumor-infiltrating immune cells, which are mainly composed of M2 macrophages and TILs (tumor-infiltrating lymphocytes).

Several reports link SP142 IC to treatment response in advanced NSCLC for specific therapies/populations, but no consensus has been reached.

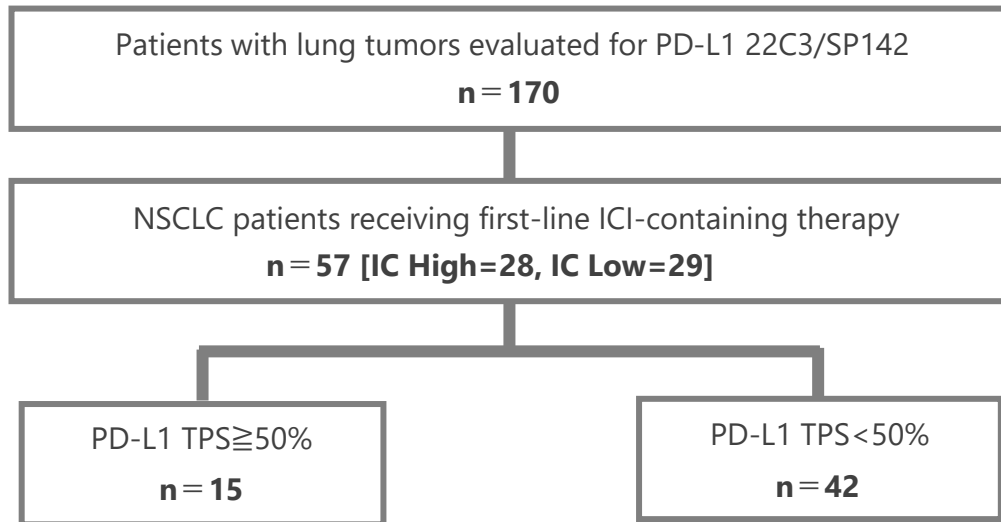
Study flow chart

Single-Center, Retrospective, Observational Study

Clinical site: 2021.08.10-2024.12.31

Follow-up: until 2025.12.31

Institution: Kuwana City Medical Center, Japan



Primary analysis

In all 57 cases,

TTF/OS according to SP142 IC High or Low

Exploratory analysis

In each $\text{TPS} \geq 50\%$ or $< 50\%$ group,

TTF/OS according to SP142 IC High or Low

* $\text{TPS} < 50\%$ group omitted due to small sample size

PD-L1 SP142 IC/TC definition

IC0: $< 1\%$	TC0: $< 1\%$
IC1: 1-5%	TC1: 1-5%
IC2: 5-10%	TC2: 5-10%
IC3: $\geq 10\%$	TC3: $\geq 10\%$

In this study, defined as IC/TC 0-1 → Low, 2-3 → High

Patients' characteristics

	SP142 IC High(2 · 3)	SP142 IC Low(0 · 1)	p Value
<u>ALL</u>	28	29	
<u>AGE</u>	71.4 (54-84)	73.8 (48-88)	
<u>SEX</u>			0.253
Male	26 (92.9%)	23 (79.3%)	
Female	2 (7.1%)	6 (20.7%)	
<u>ECOG-PS</u>			0.47
PS0-1	25 (89.3%)	23 (79.3%)	
PS2 · 3	3 (10.7%)	6 (20.7%)	
<u>Smoking</u>			0.253
Current or former	26 (92.9%)	23 (79.3%)	
Never smoker	2 (7.1%)	6 (20.7%)	
<u>Sample</u>			0.869
Surgical specimens	5 (17.9%)	4 (13.8%)	
bronchoscopy biopsy	17 (60.7%)	17 (58.6%)	
CT-guided biopsy	6 (21.4%)	8 (27.6%)	
<u>Histological type</u>			0.424
SQ	10 (35.7%)	14 (48.3%)	
Adeno	18 (64.3%)	15 (51.7%)	

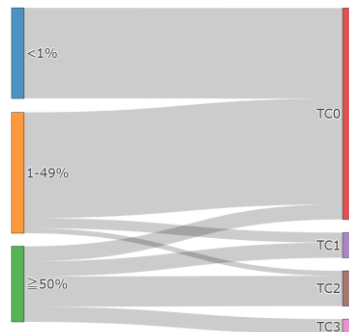
	SP142 IC High(2 · 3)	SP142 IC Low(0 · 1)	p Value
<u>EGFR mutation</u>			1
mutation	1 (3.6%)	2 (6.9%)	
wild	27 (96.4%)	27 (93.1%)	
<u>Treatment</u>			0.796
ICI monotherapy	9 (32.1%)	8 (27.6%)	
IO mono+Chemo	12 (42.9%)	11 (37.9%)	
CTLA-4	7 (25.0%)	10 (34.5%)	
<u>22C3 TPS</u>			0.0103
≥ 50%	11 (39.3%)	4 (13.8%)	
1-49%	13 (46.4%)	11 (37.9%)	
<1%	4 (14.3%)	14 (48.3%)	
<u>SP142 TC</u>			0.0411
TC High(2 · 3)	8(28.6%)	2(6.9%)	
TC Low(0 · 1)	20(71.4%)	27(93.1%)	

- The IC High group had higher rates of TC High and 22C3 TPS High.
- No notable imbalance was observed between IC High and Low groups for other variables.

The relationship between TPS and SP142 TC/IC

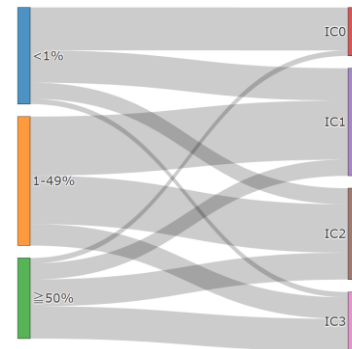
22C3 TPS $\Leftrightarrow$ SP142 (TC)

22C3 <1% (N=18)	22C3 1-49% (N=24)	22C3 $\geq$ 50% (N=15)
TC0 18	TC0 21	TC0 3
TC1 0	TC1 2	TC1 3
TC2 0	TC2 1	TC2 6
TC3 0	TC3 0	TC3 3



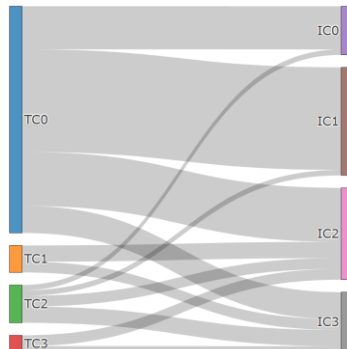
22C3 TPS $\Leftrightarrow$ SP142 (IC)

22C3 <1% (N=18)	22C3 1-49% (N=24)	22C3 $\geq$ 50% (N=15)
IC0 8	IC0 0	IC0 1
IC1 6	IC1 11	IC1 3
IC2 3	IC2 9	IC2 5
IC3 1	IC3 4	IC3 6



SP142 (TC) $\Leftrightarrow$ SP142 (IC)

TC0 (N=42)	TC1 (N=5)	TC2 (N=7)	TC3 (N=3)
IC0 8	IC0 0	IC0 1	IC0 0
IC1 19	IC1 0	IC1 1	IC1 0
IC2 10	IC2 3	IC2 2	IC2 2
IC3 5	IC3 2	IC3 3	IC3 1

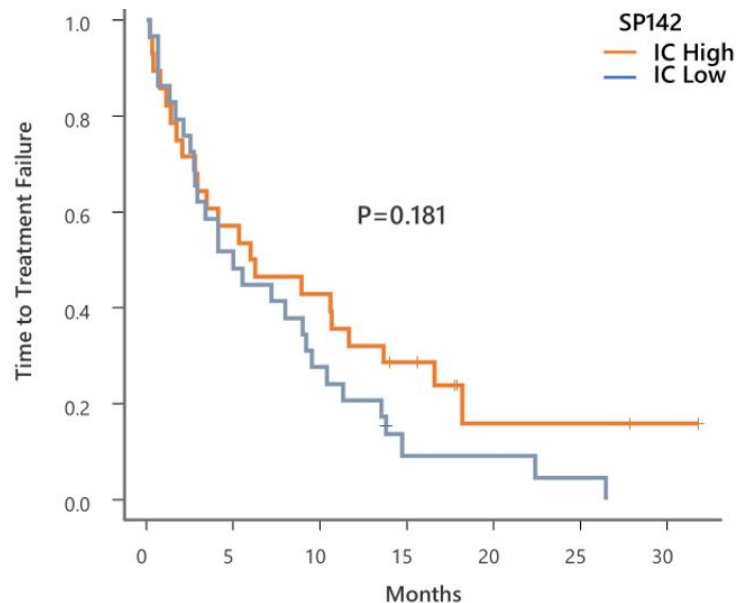


- SP142 TC was completely encompassed within TPS.
- SP142 IC was irregularly associated with both TPS and SP142 TC.

Consistent with Previous Reports

TTF/OS in all patients [n=57]

Time to Treatment Failure



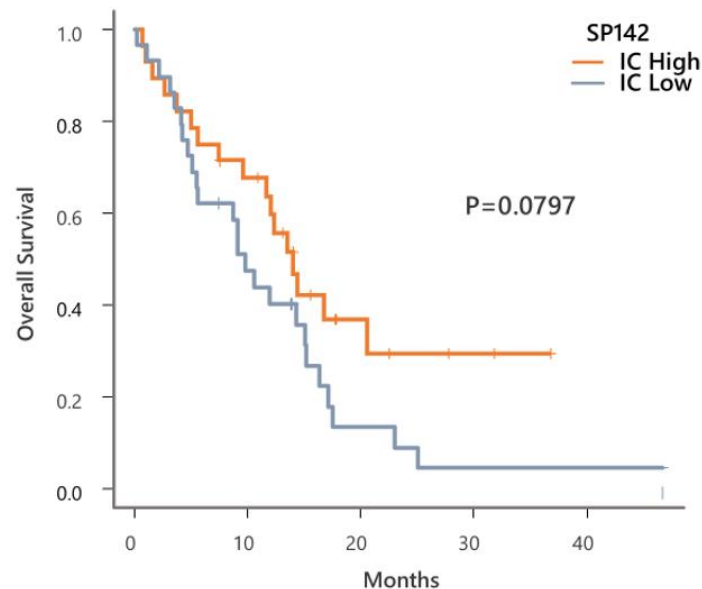
Number at risk

IC High	28	16	12	7	2	2	1
IC Low	29	14	8	2	2	1	0

IC High[IC2-3] n=28 Median TTF [Months] 6.14 95%CI: 2.83-11.70

IC Low [IC0-1] n=29 Median TTF [Months] 4.99 95%CI: 2.76-9.23

Overall Survival



Number at risk

IC High	28	18	5	2	0
IC Low	29	13	3	1	1

IC High[IC2-3] n=28 Median TTF [Months] 14.06 95%CI: 9.59-20.53

IC Low [IC0-1] n=29 Median TTF [Months] 9.86 95%CI: 5.09-15.11

TTF/OS in all patients [n=57]

Time to Treatment Failure

Factor	N	Univariate analysis			Multivariate analysis		
		HR	95%CI	P value	HR	95%CI	P value
AGE							
≥ 75	25	1.831	1.042-3.219	0.036	1.315	0.619-2.796	0.477
<75	32						
Chemotherapy							
Not contained	27	1.924	1.091-3.393	0.024	1.553	0.731-3.299	0.253
Chemo-contained	30						
22C3 TPS							
TPS ≥ 50%	15	1.648	0.898-3.025	0.107	1.649	0.898-3.030	0.107
TPS <49%	42						
SP142 IC							
High(2-3)	28	0.683	0.389-1.2	0.185	0.758	0.429-1.339	0.340
Low(0-1)	29						

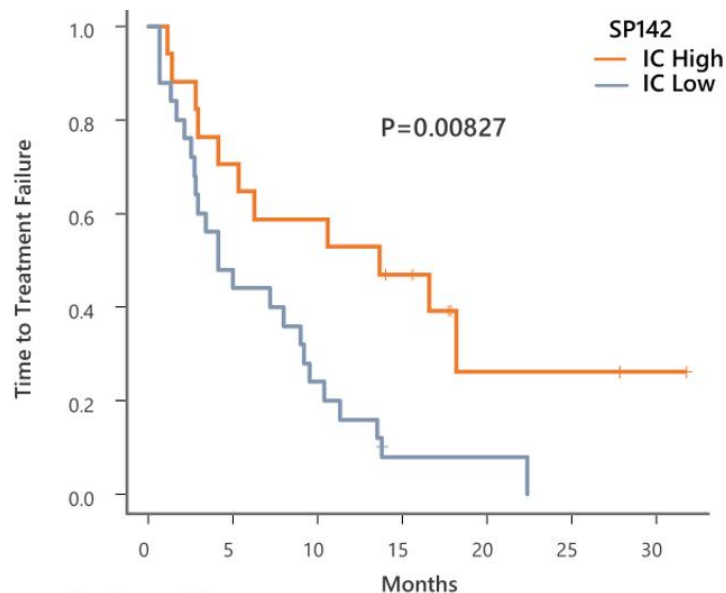
Overall Survival

Factor	N	Univariate analysis			Multivariate analysis		
		HR	95%CI	P value	HR	95%CI	P value
AGE							
≥ 75	25	1.479	0.803-2.727	0.210	1.446	0.649-3.224	0.367
< 75	32						
Chemotherapy							
Not contained	27	1.331	0.724-2.445	0.358	1.016	0.458-2.255	0.968
Chemo-contained	30						
22C3 TPS							
TPS ≥ 50%	15	1.422	0.723-2.799	0.308	1.567	0.793-3.098	0.196
TPS < 49%	42						
SP142 IC							
High(2-3)	28	0.579	0.312-1.075	0.084	0.576	0.309-1.075	0.083
Low(0-1)	29						

- SP142 IC High was not significantly associated with TTF or OS in the log-rank test and multivariate analysis.
- 22C3 TPS High was also not a significant variable for TTF or OS.

TTF/OS in TPS<50% [n=42]

Time to Treatment Failure

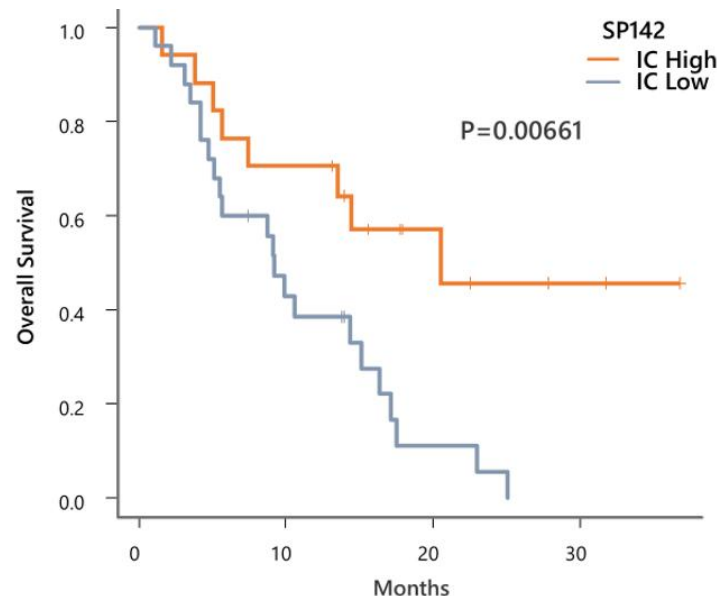


Number at risk

IC High	17	12	10	7	2	2	1
IC Low	25	11	6	1	1	0	0

IC High[IC2-3] n=17	Median TTF [Months] 13.63	95%CI: 2.96-NA
IC Low [IC0-1] n=25	Median TTF [Months] 4.17	95%CI: 2.76-9.23

Overall Survival



Number at risk

IC High	17	12	5	2
IC Low	25	10	2	0

IC High[IC2-3] n=17	Median OS [Months] 20.53	95%CI: 5.65-NA
IC Low [IC0-1] n=25	Median OS [Months] 9.17	95%CI: 5.09-15.15

TTF/OS in TPS<50% [n=42]

Time to Treatment Failure

Factor	N	Univariate analysis			Multivariate analysis		
		HR	95%CI	P value	HR	95%CI	P value
AGE							
≥ 75	20	2.349	1.195-4.62	0.013	1.623	0.657-4.013	0.294
<75	22						
Chemo							
Not contained	20	2.067	1.053-4.058	0.035	1.414	0.579-3.450	0.447
Chemo-contained	22						
22C3 TPS							
TPS 1-49%	24	0.932	0.467-1.859	0.842	1.133	0.522-2.461	0.752
TPS<1%	18						
SP142 IC							
High(2-3)	17	0.384	0.184-0.802	0.011	0.447	0.209-0.957	0.038
Low(0-1)	25						

Overall Survival

Factor	N	Univariate analysis			Multivariate analysis		
		HR	95%CI	P value	HR	95%CI	P value
AGE							
≥ 75	20	1.625	0.790-3.343	0.187	1.815	0.725-4.54	0.203
<75	22						
Chemo							
Not contained	20	1.278	0.623-2.621	0.503	0.712	0.287-1.767	0.464
Chemo-contained	22						
22C3 TPS							
TPS 1-49%	24	0.682	0.318-1.461	0.325	0.778	0.335-1.808	0.560
TPS<1%	18						
SP142 IC							
High(2-3)	17	0.336	0.147-0.765	0.009	0.358	0.150-0.856	0.021
Low(0-1)	25						

• In the TPS<50% population, SP142 IC High was independently associated with prolonged TTF and OS in the multivariate analysis.

Discussion

- **In the overall cohort, SP142 IC was not significantly associated with efficacy of Treatment.**
- **In the TPS<50% subgroup, SP142 IC High was significantly associated with longer TTF/OS with chemoimmunotherapy for advanced NSCLC.**
- **A possible explanation for this TPS<50%-specific association is response to specific therapies such as CTLA-4 inhibitors; however, the hypothesis has not been validated in this study.**
- **As a single-center retrospective study, this analysis has several limitations including potential confounding from unmeasured variables.**
- **Further validation via multicenter/prospective studies is warranted.**

Conclusion

- **PD-L1 SP142 IC expression showed no significant association with ICI-containing therapy outcomes in the overall cohort with advanced NSCLC.**
- **However, in groups with PD-L1 TPS < 50%, SP142 IC High was associated with improved clinical outcomes.**
- **SP142 IC scoring may serve as a candidate complementary biomarker in certain patient subsets.**