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PD-L1 Staining Priority in Non-small Cell Lung Cancer

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JAPAN

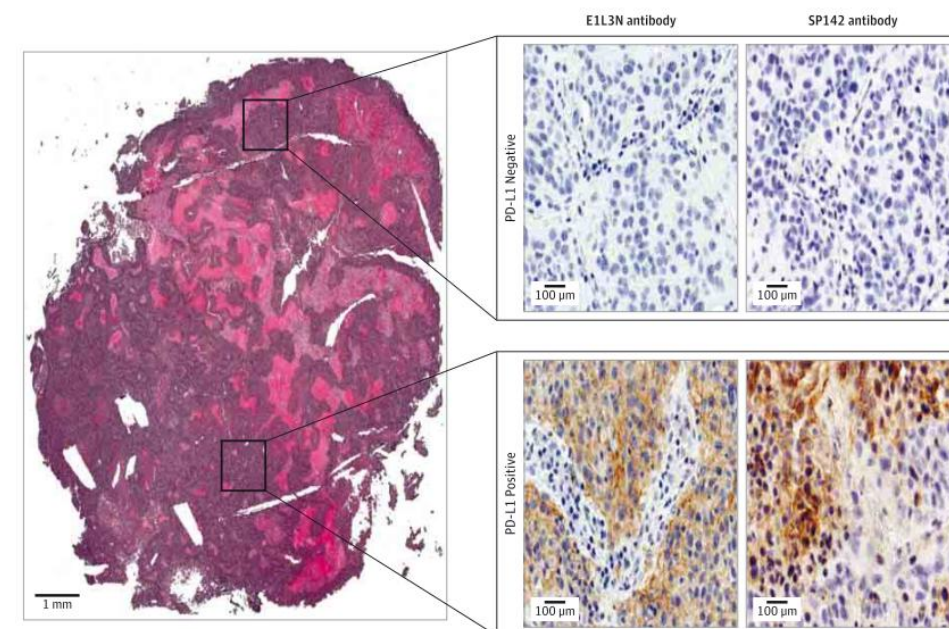
Disclosure

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(grant number: 17ET, 18ET, 19ET, 20ET, 21ET, 22ET, 23ET, 24ET, 25ET)
Generative AI was not used in the preparation of this presentation

Background

- Programmed cell death ligand (PD-L1) is one of biomarkers of immune checkpoint inhibitors
- The Dako22C3 antibody is a companion diagnostic for pembrolizumab (Keytruda®)
- No Practical guideline specify which site is best of tissue for immunohistochemistry (IHC), PD-L1 (22C3)
- PD-L1 staining varies by site, a phenomenon commonly known as intra-tumor or inter-tumor heterogeneity

Figure 1. PD-L1 Protein Heterogeneity Using Diaminobenzidine



PD-L1 indicates programmed cell death 1 ligand 1.

McLaughlin J, et al. JAMA Oncol. 2016;2:46-54

Objective

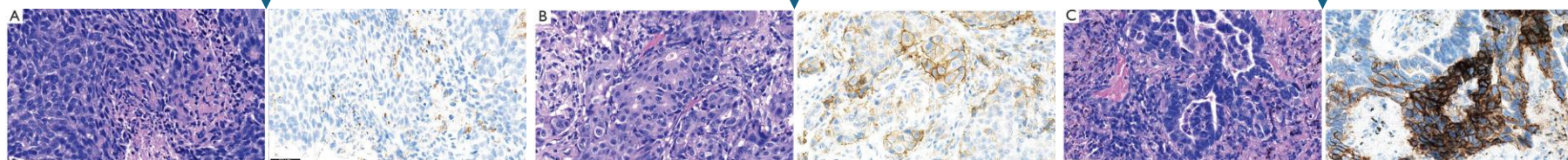
This study aimed to investigate the relationship between the heterogeneity of PD-L1 staining in non-small cell lung cancer (NSCLC) and the disease-free survival after surgical treatment

Methods

Surgical Cases at Saitama Cardiovascular Respiratory Center
Nov 2016 – May 2025

Exclusion criteria

- ✓ No informed consent
- ✓ pN0, or Direct invasion to lymph node
- ✓ R1 (incomplete resection)
- ✓ Insufficient specimen for IHC



TPS (22C3): <1%
No expression

TPS (22C3): 1-49%
Low expression

TPS (22C3): >50%
High expression

Results

Table 1. Characteristics of 111 patients

Age, year	68.4 ± 10.2
Gender, Male	67 (60.4%)
Female	44 (39.6%)
Side, Right	70 (63.0%)
Left	41 (36.9%)
Smoking status	
never	33 (29.7%)
former	69 (62.2%)
current	9 (8.1%)
Surgical procedure	
Sublobar	2 (1.8%)
Lobectomy	99 (89.2%)
Bi-lobectomy	6 (5.4%)
Pneumonectomy	4 (3.6%)
Tumor size, mm	33.7 ± 18.6
Invasive size, mm	32.4 ± 18.9
pN factor	
1	42 (37.8%)
2	68 (61.3%)
3	1 (0.9%)
pStage	
IIA	1 (0.9%)
IIB	31 (27.9%)
IIIA	64 (57.7%)
IIIB	15 (13.5%)
Histology	
Adeno	77 (69.4%)
Squamous	21 (18.9%)
Other	13 (11.7%)
EGFR	
wild type	71 (64.0%)
mutated	38 (34.2%)
NA	2 (1.8%)
Adjuvant	
Yes	49 (44.1%)
No	62 (55.9%)
Recurrence	
Yes	74 (66.7%)
No	37 (33.3%)

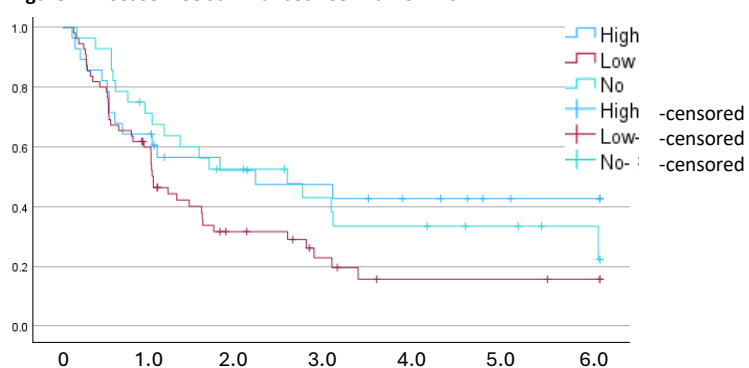
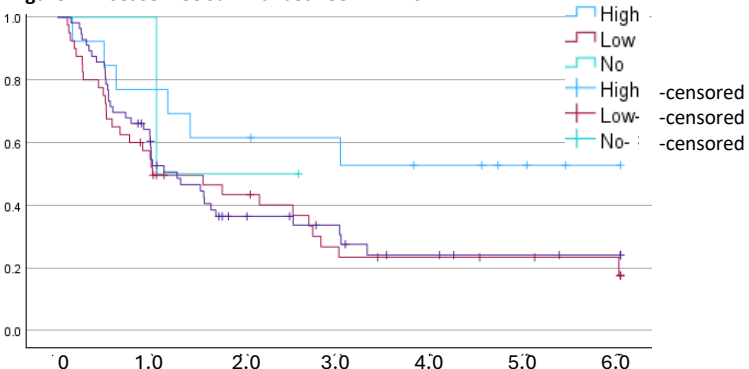
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Cause of death

Alive	72	(64.9%)
Cancer	33	(29.7%)
Others	6	(5.4%)

Follow-up period (year) 3.73 ± 2.37

Data on age: mean ± SD. B-TPS: Tumor Proportion Score of tumor tissue by Transbronchial biopsy, T-TPS: Tumor proportion Score of main tumor tissue, L-TPS: Tumor Proportion Score of metastatic lymph node tissue

Figure 1. Disease-free Survival between Tumor TPS

Figure 2. Disease-free Survival between LN TPS

Table 2. TPS relationship between Tumor and Metastatic lymph node

Tumor	Metastatic lymph node				
	PD-L1	No (0%)	Low (1-49)	High (≥50)	
	No	28	8	1	37
	Low	23	14	5	42
	High	5	15	11	31
		56	37	17	110*

TPS concordance rate : 48.2% (P < 0.001),

*1 case was excluded because LN TPS value was not available

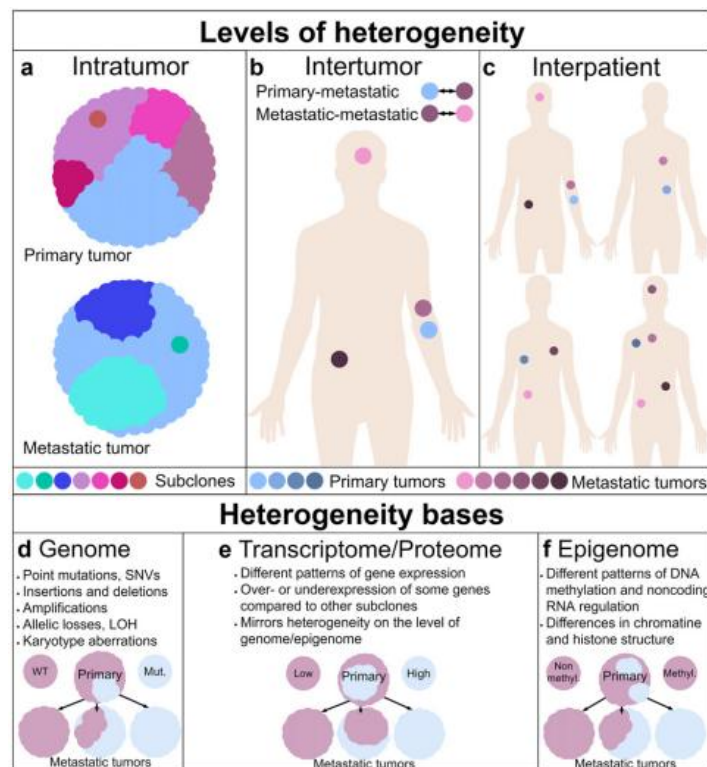
Table 3. Five-year Disease-free survival according to Tumor TPS

Tumor Proportion Score	5 year DFS	P value
No expression (0%)	33.4%	0.081
Low expression (1-49%)	15.6%	
High expression (≥50%)	42.6%	

Table 4. Five-year Disease-free survival according to LN TPS

Tumor Proportion Score	5年DFS	P値
No expression (0%)	24.1%	0.279
Low expression (1-49%)	23.4%	
High expression (≥50%)	52.7%	

Discussion



Grzywa TM, et al. Transl Oncol. 2017; 10: 956-75.

- Heterogeneity is important clinical factor in immunotherapy
- It is still unknown which is best biopsy site

Conclusion

- TPS concordance rate indicated 48.2%
- Main tumor TPS may be a better recurrence prediction factor than metastatic lymph node TPS
- It will be necessary to increase the number of cases due to clarify the clinical significance according to the TPS biopsy site in future

Acknowledgement

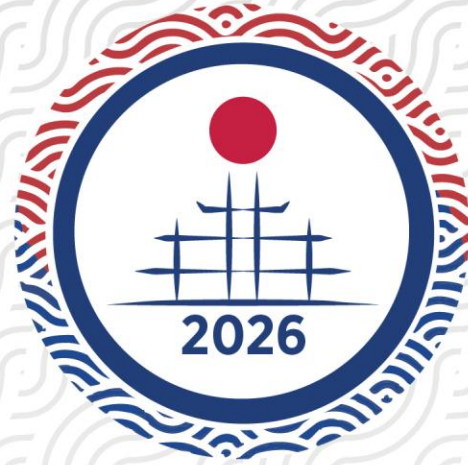
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Thank You.