Exploring immune dysfunction in surgically-treated early-stage NS

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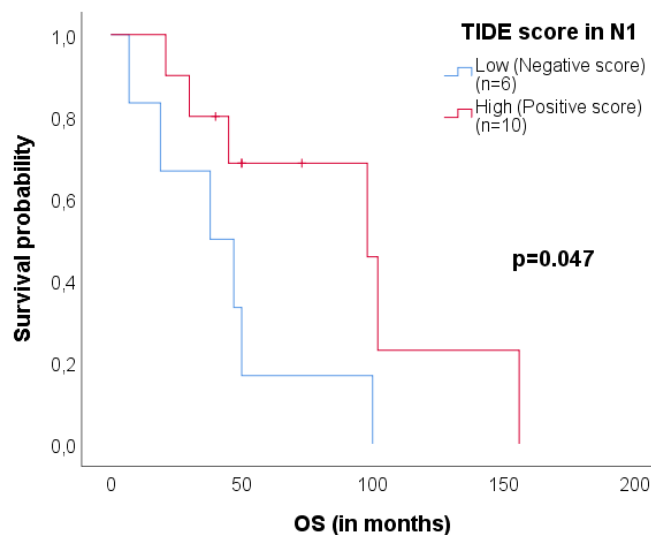[3] Institute of Pathology, Medical Faculty, LMU Munich, Germany

Background

Tumor tissue as well as regional lymph nodes are removed during curative surgery for early-stage non-small cell lung cancer (NSCLC). These tissues provide a snapshot of the patient's immune system at the time of surgery. We performed immune cell transcriptomics in matched tumor tissue, tumor bearing (tb) and non-tumor bearing (ntb) N1 as well as N2 lymph nodes (LNs) in patients with NSCLC and investigated their relation to survival.

Methods

Hospital databases were screened for surgically treated NSCLC patients for whom tumor tissue, tbLNs as well as N1 and N2 ntbLNs were available. Clinical as well as demographic data were extracted from hospital records. Expression profiling of 770 immune-related genes was performed using the PanCancer IO 360 panel by NanoString Technologies. We analyzed association between transcriptomics data and overall survival (OS) and progression-free survival (PFS) using stepwise Cox regression.
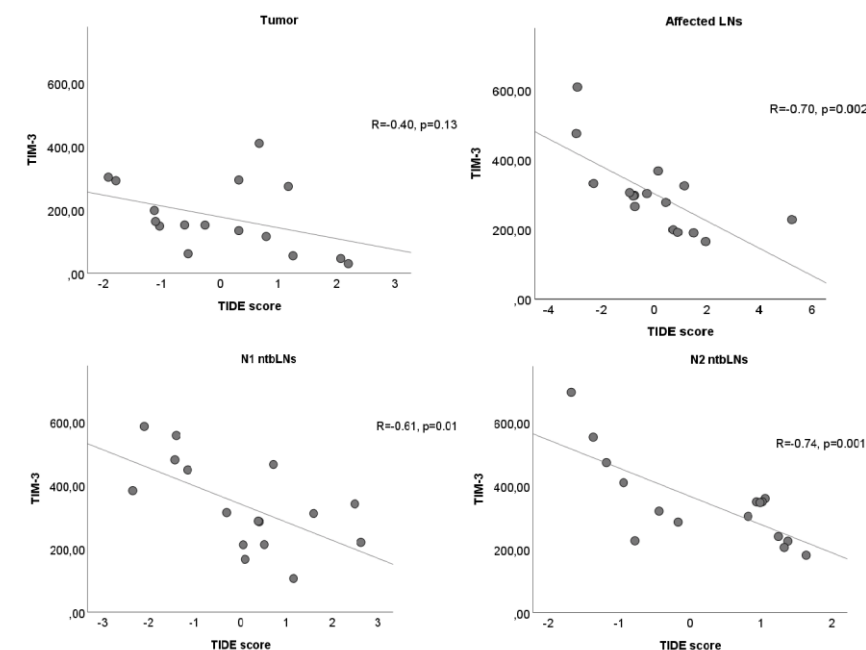
Tissue	Type of survival	coef	SE	HR	p-value
Tumor	OS	0.31	0.32	1.36	0.33
Affected LNs		-0.24	0.18	0.79	0.20
ntb N1 LN		*-0.53*	*0.24*	*0.59*	*0.026*
ntb N2 LN		-0.56	0.32	0.57	0.081
Tumor	PFS	0.32	0.28	1.38	0.25
Affected LNs		-0.34	0.20	0.72	0.096
ntb N1 LN		-0.42	0.24	0.66	0.076
ntb N2 LN		-0.52	0.31	0.59	0.093

HR= Hazard Ratio, SE= Standard error, OS= Overall survival, PFS= Progression-free survival, ntbLN= non-tumor bearing lymph node

TIDE score in N1
Low (Negative score) (n=6)
High (Positive score) (n=10)
p=0.047

N= 4 patients All tissues positive or negative

N= 5 patients Discrepancies in one tissue

N= 7 patients Discrepancies in two tissues

Tumor — R=-0.40, p=0.13
Affected LNs — R=-0.70, p=0.002
N1 ntbLNs — R=-0.61, p=0.01
N2 ntbLNs — R=-0.74, p=0.001

Conclusion

TIDE scores in tumor and regional lymph nodes may indicate a dysfunctional immune status and can predict postoperative survival in NSCLC.