

Immune-related adverse events and disease outcomes after the third dose of SARS-CoV-2 mRNA-BNT162b2 vaccine in cancer patients receiving immune checkpoint inhibitors

Supplemental material

Supplementary Table 1. Baseline patient characteristics

Supplementary Fig. 1 ROC curve analysis of anti-RBD-S1 IgG titers on DCB in the subgroup of lung cancer patients

Supplementary Fig. 2 Time-to-event depending on clinical benefit outcome

Supplementary Fig. 3 Time-to-event depending on antibody response level in subgroup of lung cancer patients

Supplementary Table 1. Baseline patient characteristics

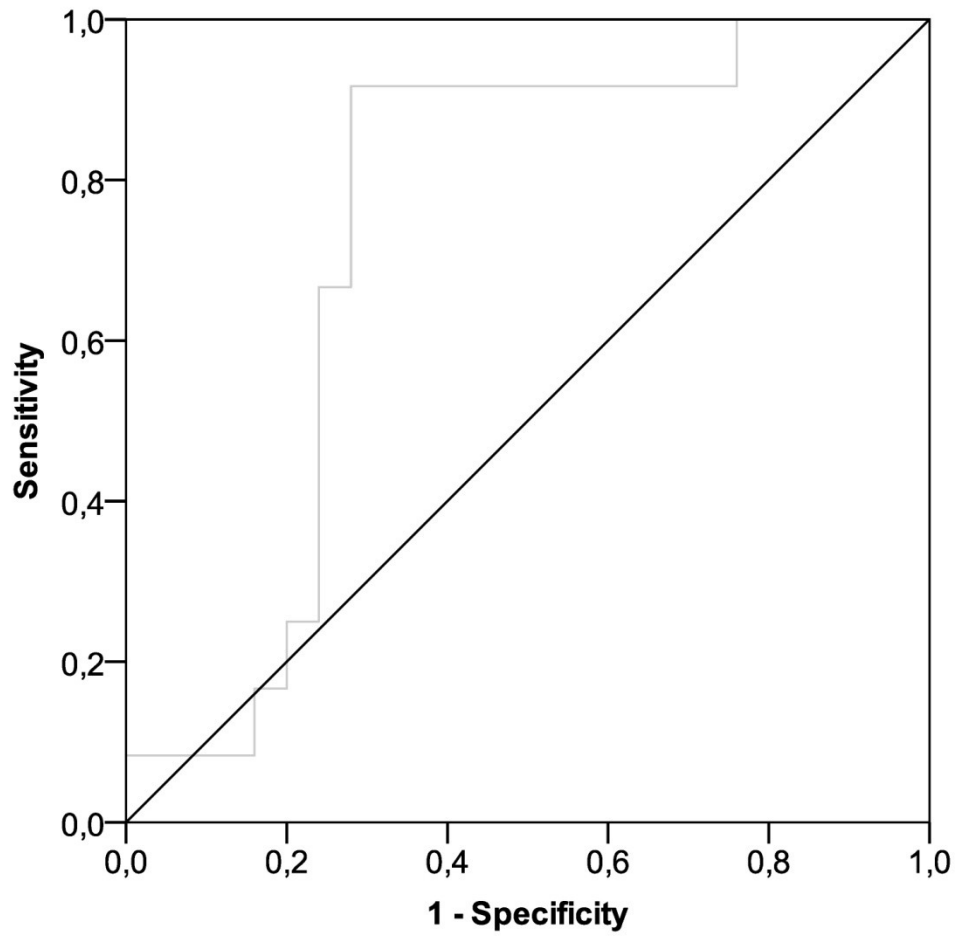
	All patients, N=56 (100%)
Mean age, years (standard deviation)	65.9 (10.0)
Sex	
- Female	16 (28.6%)
- Male	40 (71.4%)
ECOG PS	
- 0	17 (30.4%)
- 1	39 (69.6%)
Tumor type	
- NSCLC	31 (55.6%)
- SCLC	6 (10.5%)
- Kidney	7 (12.5%)
- Skin (Melanoma, Merkel-cell, Squamous cell carcinoma)	7 (12.5%)
- Urothelial	4 (7.1%)
- Gastrointestinal	1 (1.8%)
Extent of disease	
- Metastatic	56 (100%)
Treatment setting	
- metastatic, first line	36 (64.3%)
- metastatic, second or later line	20 (35.7%)
Number of metastatic sites	
- 1	23 (41.1%)
- ≥ 2	33 (58.9%)
CNS metastases	
- no	44 (78.6%)
- yes	12 (21.4%)
Liver metastases	
- no	50 (89.3%)
- yes	6 (10.7%)
Bone metastases	
- no	39 (69.6%)
- yes	17 (30.4%)
Weight loss ^a	
- <5%	39 (69.6%)
- $\geq 5\%$	17 (30.4%)
PD-L1 TPS	
- $\geq 1\%$	35 (62.5%)
- <1%	16 (28.5%)

- unknown	5 (8.9%)
Corticosteroid therapy ^b	8 (16.7%)
ICI-based treatment	
- Pembrolizumab	25 (44.6%)
- Nivolumab	21 (37.5%)
- Atezolizumab	6 (10.7%)
- Durvalumab	2 (3.6%)
- Avelumab	1 (1.8%)
- Cemiplimab	1 (1.8%)
Duration (months) of ICI treatment, median (IQR)	19.8 (10.5-26.9)
Duration (months) of ICI treatment before third vaccine dose, median (IQR)	8.4 (5.1-16.1)
Duration (months) of ICI treatment after third vaccine dose, median (IQR)	4.6 (1.5-18.8)

Abbreviations: SD, standard deviation; ECOG PS, Eastern Cooperative Oncology Group Performance Status; CNS, central nervous system; NSCLC, non-small-cell lung cancer; SCLC, small-cell lung cancer; PD-L1 TPS, programmed cell death-ligand 1 tumor proportion score; ICI, immune checkpoint inhibitor; IQR, interquartile range.

^a weight loss indicates body weight variation in the 28 days preceding the third dose of vaccine; ^b corticosteroid therapy indicates ≥ 10 mg prednisone equivalent daily for at least 7 days in the 28 days preceding the third dose of vaccine.

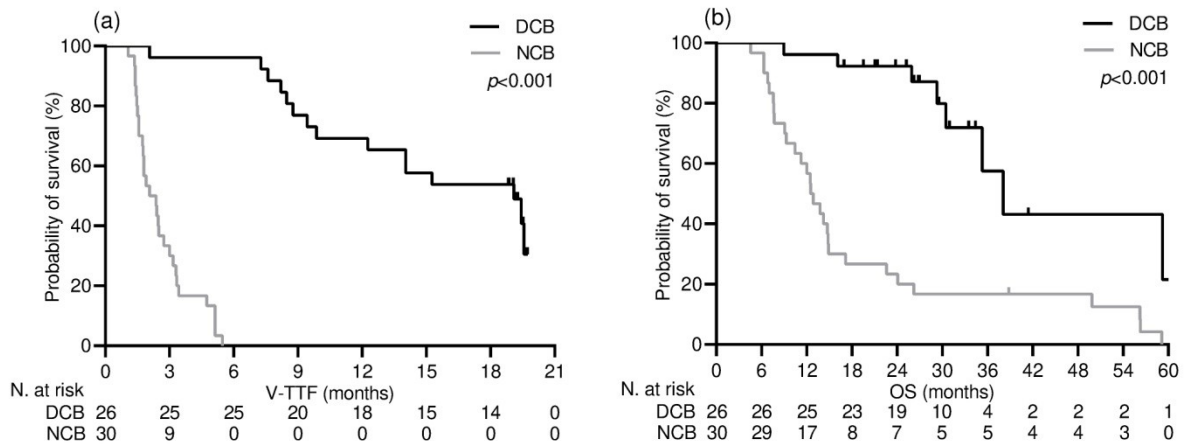
Supplementary Fig. 1 ROC curve analysis of anti-RBD-S1 IgG titers on DCB in the subgroup of lung cancer patients



AUC relative value: AUC 0.73 (95% CI 0.56-0.90), $p=0.021$.

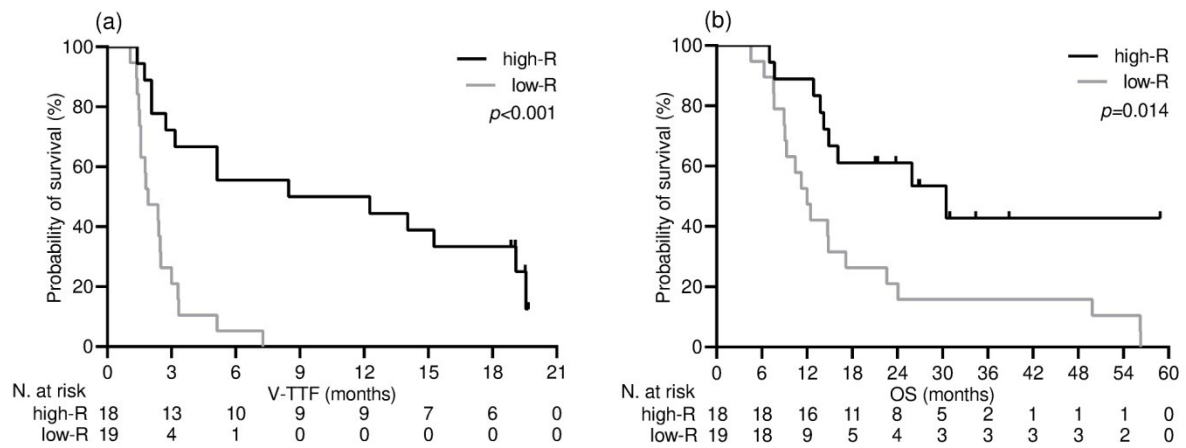
Abbreviations: ROC, receiver operating characteristic; RBD-S1, receptor-binding domain of the SARS-CoV-2 Spike protein; DCB, durable clinical benefit; AUC, area under the curve; CI, confidence interval.

Supplementary Fig. 2 Time-to-event depending on clinical benefit outcome



(a) Vaccine-related time-to-treatment failure and (b) overall survival: DCB (durable clinical benefit) vs. NCB (no clinical benefit)

Supplementary Fig. 3 Time-to-event depending on antibody response level in subgroup of lung cancer patients



(a) Vaccine-related time-to-treatment failure and (b) overall survival: High-R (subgroup of patients with an anti-RBD-S1 IgG titer ≥ 486 BAU/mL after the third dose of vaccine) vs. Low-R (subgroup of patients with an anti-RBD-S1 IgG titer < 486 BAU/mL after the third dose of vaccine).

Abbreviations: RBD-S1, receptor-binding domain of the SARS-CoV-2 Spike protein; BAU, binding antibody unit.