

Supplemental Table 1: Adverse events of pembrolizumab treatment

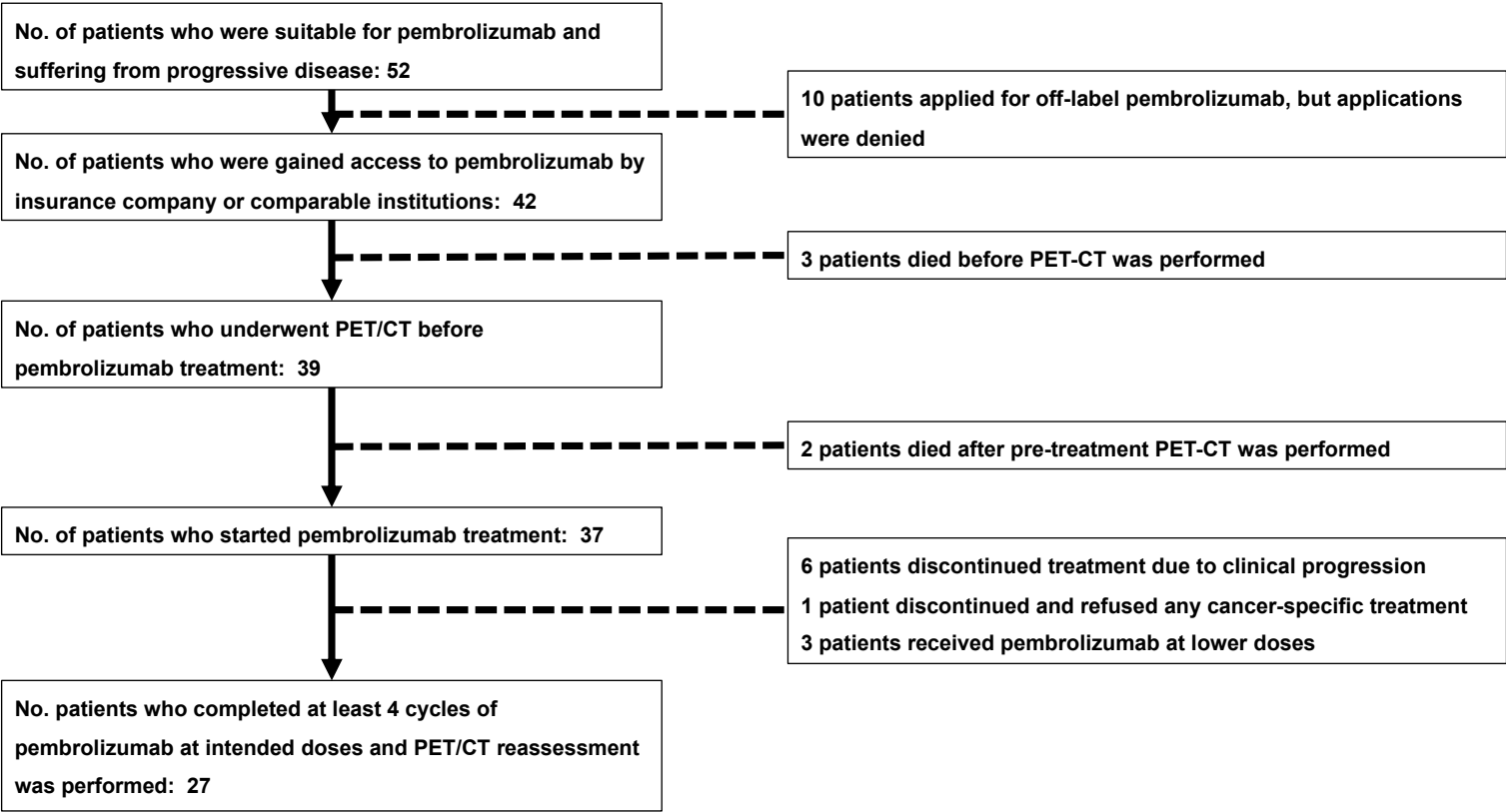
| Body system | All adverse events | | Adverse events attributed to pembrolizumab | |
|-------------------------------|--------------------|--------|--|--------|
| | All | ≥ 3 | All | ≥ 3 |
| Respiratory tract | 3 (11%) | 1 (4%) | 1 (4%) | 1 (4%) |
| New or increasing dyspnea | 2 (8%) | - | - | - |
| Pneumonitis | 1 (4%) | 1 (4%) | 1 (4%) | 1 (4%) |
| Gastrointestinal tract | 10 (37%) | - | 7 (26%) | - |
| Nausea | 5 (18%) | - | 5 (18%) | - |
| Dysphagia | 1 (4%) | - | - | - |
| Loss of appetite | 2 (8%) | - | 2 (8%) | - |
| Constipation | 2 (8%) | - | - | - |
| Hepatobiliary System | 1 (4%) | - | - | - |
| GOT increase | 1 (4%) | - | - | - |
| Hematopoietic System | 4 (15%) | 2 (8%) | 3 (11%) | 2 (8%) |
| Anemia | 1 (4%) | - | - | - |
| Lymphopenia | 3 (11%) | 2 (8%) | 3 (11%) | 2 (8%) |
| Endocrinologic System | 3 (11%) | - | 3 (11%) | - |
| Hypothyroidism | 2 (8%) | - | 2 (8%) | - |
| Hyperthyroidism | 1 (4%) | - | 1 (4%) | - |
| Skin | 2 (8%) | - | 2 (8%) | - |
| Exanthema | 2 (8%) | - | 2 (8%) | - |
| Genitourinary System | 2 (8%) | - | - | - |
| Creatinine increase | 2 (8%) | - | - | - |
| Others | | | | |
| Fatigue | 2 (8%) | 1 (4%) | 2 (8%) | 1 (4%) |

Supplemental Table 2: Response stratified by PD-L1 expression

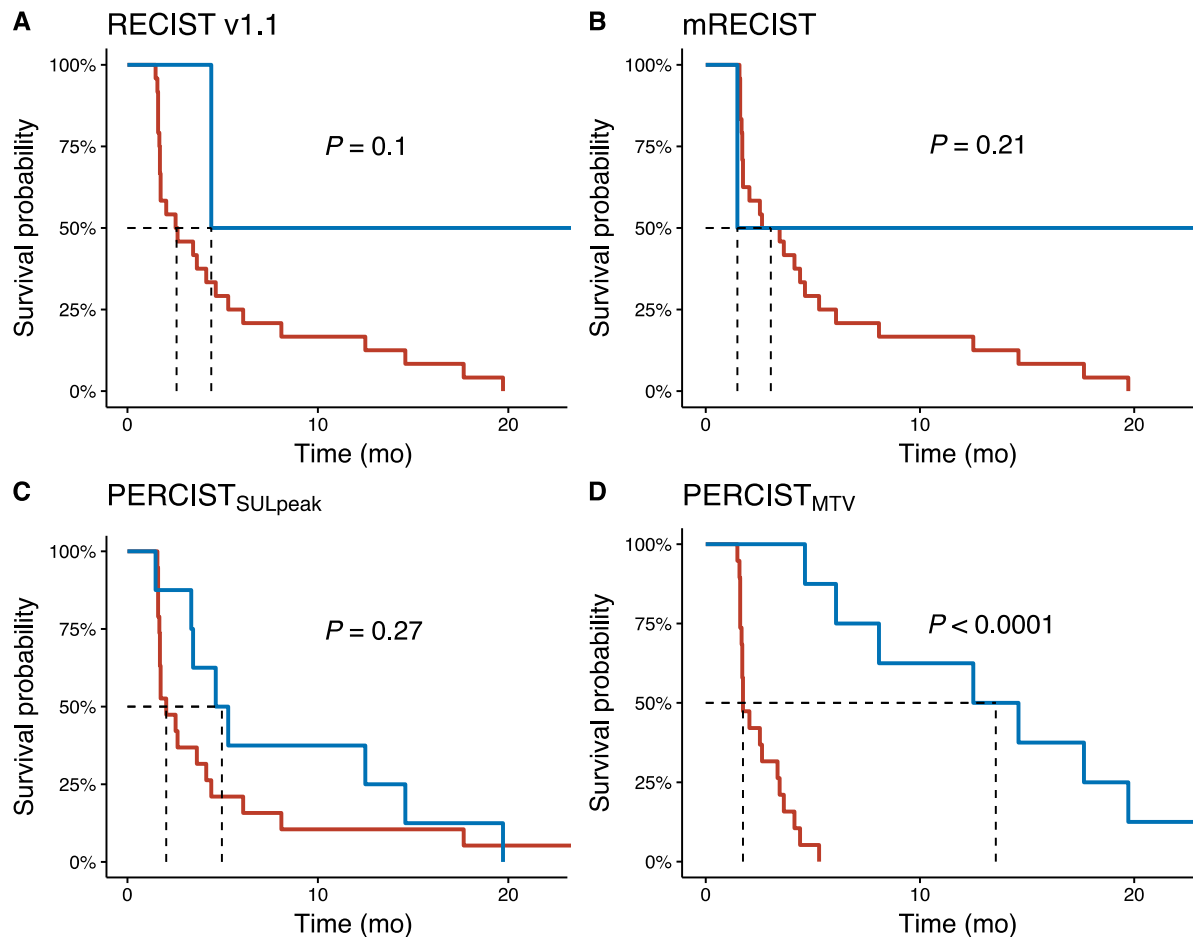
| Imaging Response | PD-L1 expression | | | | Fisher's exact test |
|----------------------------------|------------------|-----------------|------------------|-------------------|---------------------|
| | 0% (n=12) | 1-49% (n=11) | 50-100% (n=3) | Overall (n=26) | |
| RECIST v1.1 | | | | | |
| CR | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | |
| PR | 0 (0%) | 2 (18.2%) | 0 (0%) | 2 (7.7%) | |
| SD | 6 (50.0%) | 5 (45.5%) | 1 (33.3%) | 12 (46.2%) | |
| PD | 5 (41.7%) | 4 (36.4%) | 2 (66.7%) | 11 (42.3%) | |
| not evaluable | 1 (8.3%) | 0 (0%) | 0 (0%) | 1 (3.8%) | <i>P</i> =0.78 |
| mRECIST | | | | | |
| CR | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | |
| PR | 1 (8.3%) | 1 (9.1%) | 0 (0%) | 2 (7.7%) | |
| SD | 5 (41.7%) | 5 (45.5%) | 1 (33.3%) | 11 (42.3%) | |
| PD | 5 (41.7%) | 5 (45.5%) | 2 (66.7%) | 12 (46.2%) | |
| not evaluable | 1 (8.3%) | 0 (0%) | 0 (0%) | 1 (3.8%) | <i>P</i> =1.00 |
| PERCIST_{SULpeak} | | | | | |
| CMR | 0 (0%) | 1 (9.1%) | 0 (0%) | 1 (3.8%) | |
| PMR | 4 (33.3%) | 2 (18.2%) | 0 (0%) | 6 (23.1%) | |
| SMD | 6 (50.0%) | 2 (18.2%) | 2 (66.7%) | 10 (38.5%) | |
| PMD | 2 (16.7%) | 6 (54.5%) | 1 (33.3%) | 9 (34.6%) | <i>P</i> =0.23 |
| PERCIST_{MTV} | | | | | |
| CMR | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | |
| PMR | 3 (25.0%) | 3 (27.3%) | 1 (33.3%) | 7 (26.9%) | |
| SMD | 2 (16.7%) | 4 (36.4%) | 0 (0%) | 6 (23.1%) | |
| PMD | 7 (58.3%) | 4 (36.4%) | 2 (66.7%) | 13 (50.0%) | <i>P</i> =0.72 |

RECIST v1.1 = Response Evaluation Criteria in Solid Tumors Version 1.1; mRECIST = Revised Modified Response Evaluation Criteria in Solid Tumors for Assessment of Response in Malignant Pleural Mesothelioma Version 1.1; PERCIST_{SULpeak} = PET Response Criteria in Solid Tumors; PERCIST_{MTV} = PET Response Criteria in Solid Tumors using metabolic tumor volume as marker of response.

Supplemental Figure 1: Patient recruitment

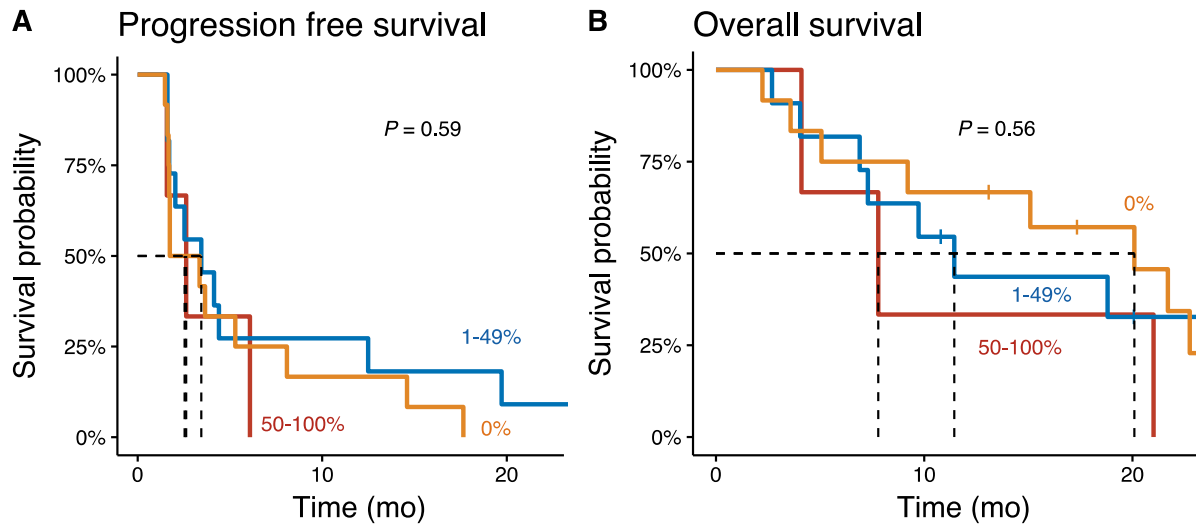


Supplemental Figure 2: Progression free survival stratified by response using different response criteria



Progression free survival (PFS) stratified by responders (blue) and non-responders (red) identified by different response assessment criteria. Log-rank test revealed that only PERCIST_{MTV} responders (D) showed significantly longer PFS compared to non-responders (median 1.7 vs. 13.5 months). *RECIST v1.1* = Response Evaluation Criteria in Solid Tumors Version 1.1; *mRECIST* = Revised Modified Response Evaluation Criteria in Solid Tumors for Assessment of Response in Malignant Pleural Mesothelioma Version 1.1; *PERCIST_{SULpeak}* = PET Response Criteria in Solid Tumors; *PERCIST_{MTV}* = PET Response Criteria in Solid Tumors using metabolic tumor volume as marker of response.

Supplemental Figure 3: Progression free survival and overall survival stratified by PD-L1 Expression



(A) Progression free survival and (B) overall survival stratified by PD-L1 expression.