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|------------------|-----|-------------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|---------|
| N0 | 155 | 9.94±15.17 | 0.546 | 1.31±2.07 | 0.222 | 3.57±3.14 | 0.114 | 0.02±0.05 | 0.246 | 0.67±0.78 | 0.507 |
| N1+N2 | 167 | 9.81±14.63 | | 1.32±2.05 | | 3.02±2.81 | | 0.02±0.04 | | 0.58±0.74 | |
| Histology | | | | | | | | | | | |
| Adenocarcinoma | 230 | 5.01±7.31 | 0.004 | 1.34±1.66 | 0.908 | 3.62±3.25 | 0.347 | 0.01±0.02 | 0.253 | 0.96±0.96 | < 0.001 |
| Squamous | 94 | 11.79±16.59 | | 1.30±2.19 | | 3.14±2.85 | | 0.02±0.05 | | 0.48±0.61 | |
| PD-L1 expression | | | | | | | | | | | |
| Positive | 40 | 4.77±8.48 | 0.090 | 2.21±2.68 | 0.002 | 3.36±2.67 | 0.546 | 0.02±0.05 | 0.139 | 0.92±1.06 | 0.084 |
| Negative | 284 | 10.53±15.40 | | 1.18±1.92 | | 3.27±3.02 | | 0.02±0.05 | | 0.58±0.70 | |

Supplementary Table 2. The correlation between tumor PD-L1 expression with clinicopathological characteristics.

| Variables | Tumor PD-L1 expression positive, N (%) | Tumor PD-L1 Expression negative, N (%) | p-value |
|-----------------|--|--|---------|
| Age (years) | | | |
| < 60 | 14 (9.9) | 127 (90.1) | 0.246 |
| ≥ 60 | 26 (14.2) | 157 (85.8) | |
| Gender | | | |
| Male | 31 (14.2) | 187 (85.8) | 0.141 |
| Female | 9 (8.5) | 97 (91.5) | |
| Smoking status | | | |
| Non-smoking | 16 (10.6) | 135 (89.4) | 0.371 |
| Current smoking | 24 (13.9) | 149 (86.1) | |
| Stage | | | |
| I+II | 17 (11.6) | 130 (88.4) | 0.697 |
| III+IV | 23 (13.0) | 154 (87.0) | |
| T stage | | | |
| T1+T2 | 22 (9.8) | 203 (90.2) | 0.034 |
| T3+T4 | 18 (18.2) | 81 (81.8) | |
| N stage | | | |
| N0 | 17 (11.0) | 138 (89.0) | 0.446 |
| N1+N2 | 23 (13.8) | 144 (86.2) | |
| Histology | | | |
| Adenocarcinoma | 21 (9.1) | 209 (90.9) | 0.006 |
| Squamous | 19 (20.2) | 75 (79.8) | |

Supplementary Table 3. The correlation between density of Siglec-15⁺ cells, CD8⁺ T cells, and FOXP3⁺ T cells

| | Siglec-15 ⁺ cells' density in tumor | | CD8 ⁺ cells' density in tumor | | CD8 ⁺ cells' density in stroma | | FOXP3 ⁺ cells' density in tumor | | FOXP3 ⁺ cells' density in stroma | |
|---|--|---------|--|---------|---|---------|--|---------|---|---------|
| | r | p-value | r | p-value | r | p-value | r | p-value | r | p-value |
| Siglec15 ⁺ cells' density in tumor | - | - | 0.093 | 0.093 | 0.238 | < 0.001 | -0.071 | 0.199 | 0.064 | 0.248 |
| CD8 ⁺ cells' density in tumor | 0.093 | 0.093 | - | - | 0.635 | < 0.001 | 0.286 | < 0.001 | 0.315 | < 0.001 |
| CD8 ⁺ cells' density in stroma | 0.238 | < 0.001 | 0.635 | < 0.001 | - | - | 0.065 | 0.244 | 0.283 | < 0.001 |
| FOXP3 ⁺ cells' density in tumor | -0.071 | 0.199 | 0.286 | < 0.001 | 0.065 | 0.244 | - | - | 0.387 | < 0.001 |
| FOXP3 ⁺ cells' density in stroma | 0.064 | 0.248 | 0.315 | < 0.001 | 0.283 | < 0.001 | 0.387 | < 0.001 | - | - |

Supplementary Table 4. Univariate and multivariate analysis of overall survival.

| Variables | Event/ Number | Univariate analysis | | Multivariate analysis | |
|---|------------------|------------------------------------|---------------------|-----------------------|---------|
| | | Median survival, 95% CI (month) | Log rank p-value | HR, 95% CI | p-value |
| Age (years) | | | | | |
| < 60 | 89/141 | 33.0 (21.666, 44.334) | 0.030 | 0.758 (0.569, 1.009) | 0.058 |
| ≥ 60 | 128/183 | 19.8 (14.038, 25.562) | | 1.320 (0.991, 1.757) | |
| Gender | | | | | |
| Male | 150/218 | 21.4 (16.388, 26.412) | 0.070 | | |
| Female | 67/106 | 32.6 (25.461, 39.739) | | | |
| Smoking status | | | | | |
| Non-smoking | 99/151 | 27.8 (20.565, 35.035) | 0.134 | | |
| Current smoking | 118/173 | 22.0 (15.729, 28.271) | | | |
| TNM Stage | | | | | |
| I+II | 74/147 | 51.3 (-, -) | < 0.001 | 0.720 (0.477, 1.086) | 0.117 |
| III+IV | 143/177 | 16.8 (13.025, 20.575) | | 1.389 (0.921, 2.095) | |
| T stage | | | | | |
| T1+T2 | 132/225 | 34.0 (23.465, 44.535) | < 0.001 | 0.406 (0.296, 0.555) | < 0.001 |
| T3+T4 | 85/99 | 10.2 (8.604, 11.796) | | 2.466 (1.802, 3.373) | |
| N stage* | | | | | |
| N0 | 85/155 | 38.4 (18.500, 58.300) | < 0.001 | 0.655 (0.442, 0.971) | 0.035 |
| N1+N2 | 130/167 | 20.0 (14.064, 25.936) | | 1.527 (1.030, 2.264) | |
| Histology | | | | | |
| Adenocarcinoma | 64/94 | 27.7 (22.394, 33.006) | 0.129 | | |
| Squamous | 153/230 | 16.8 (10.529, 23.071) | | | |
| Siglec-15 ⁺ cell' density in tumor | | | | | |
| High | 103/155 | 24.7 (16.340, 33.060) | 0.469 | | |
| Low | 114/169 | 24.2 (17.331, 31.069) | | | |
| CD8 ⁺ T cell' density in tumor | | | | | |
| High | 152/240 | 25.3 (19.238, 31.362) | 0.034 | 1.023 (0.742, 1.411) | 0.891 |
| Low | 65/84 | 20.4 (11.615, 29.185) | | 0.978 (0.709, 1.348) | |

| | | | | | |
|---|---------|-----------------------|-------|----------------------|---------|
| CD8 ⁺ T cells' density in stroma | | | | | |
| High | 45/81 | 28.0 (0.000, 57.446) | 0.037 | 0.732 (0.515, 1.042) | 0.083 |
| Low | 172/243 | 24.2 (19.196, 29.204) | | 1.366 (0.960, 1.943) | |
| FOXP3 ⁺ T cells' density in tumor | | | | | |
| High | 58/94 | 25.3 (18.017, 32.583) | 0.445 | | |
| Low | 159/230 | 24.2 (19.365, 29.035) | | | |
| FOXP3 ⁺ T cells' density in stroma | | | | | |
| High | 92/162 | 27.9 (17.265, 38.535) | 0.005 | 0.751 (0.563, 1.003) | 0.052 |
| Low | 125/162 | 20.4 (15.602, 25.198) | | 1.331 (0.997, 1.776) | |
| PD-L1 expression | | | | | |
| Positive | 31/40 | 11.9 (9.576, 14.224) | 0.007 | 1.548 (1.021, 2.346) | 0.039 |
| Negative | 186/284 | 26.6 (22.175, 31.025) | | 0.646 (0.426, 0.979) | |
| Adjuvant chemotherapy | | | | | |
| Yes | 108/174 | 34.0 (24.060, 43.940) | 0.001 | 0.537 (0.401, 0.718) | < 0.001 |
| No | 109/150 | 17.7 (12.046, 23.354) | | 1.863 (1.392, 2.492) | |

*2 patients with N3 were not included due to the small size sample