**Supplemental Table 4**. Univariate analysis of clinical and pathologic features associated with time to treatment failure with PD-1 monotherapy.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **N(events)** | **Median(95%CI)** | **HR(95%CI)** | **p-value** |
| **Log10(TMB)** | 181(109) |  | 0.41 (0.25-67) | P<0.001 |
| **Driver** |  |  |  | P<0.0001 |
| BRAF Class I | 40(33) | 7.45[4.07-22.46] |  |  |
| NF1 | 51(25) | 21.97[11.4-NA] | 0.45[0.27-0.76] | 0.0027 |
| NRAS Q61 | 48(35) | 4.15[3.58-12.58] | 0.99[0.62-1.6] | 0.9718 |
| Other Drivers | 42(16) | NA[23.35-NA] | 0.35[0.19-0.64] | 6e-04 |
| **Site** |  |  |  | 0.0159 |
| Head/Neck | 56(26) | 41.02[14.61-NA] |  |  |
| Trunk/Extremity | 92(60) | 9.16[6.7-21.64] | 1.74[1.1-2.76] | 0.0184 |
| Unknown Primary | 32(23) | 6.26[3.97-36.58] | 2.07[1.18-3.64] | 0.011 |
| **Abnormal LDH** |  |  |  | 0.0572 |
| 0 | 109(63) | 16.52[8.51-NA] |  |  |
| 1 | 32(24) | 5.44[2.99-23.35] | 1.61[1-2.57] | 0.0482 |
| **NLR>=4.73** |  |  |  | 0.0135 |
| 0 | 125(69) | 21.64[12.41-NA] |  |  |
| 1 | 47(33) | 5.29[3.15-22.46] | 1.72[1.14-2.61] | 0.0104 |
| **REC>=1.5%** |  |  |  | 0.4663 |
| 0 | 59(35) | 13.33[3.51-NA] |  |  |
| 1 | 113(67) | 14.48[9.43-44.89] | 0.86[0.57-1.29] | 0.4626 |
| **RLC >= 17.5%** |  |  |  | 0.0371 |
| 0 | 57(38) | 6.73[3.58-22.46] |  |  |
| 1 | 115(64) | 21.64[12.41-NA] | 0.65[0.43-0.97] | 0.0331 |
| **ECOG Performance Status** |  |  |  | 0.0191 |
| 0 | 108(64) | 16.98[10.54-NA] |  |  |
| 1 | 60(35) | 14.48[6.86-NA] | 1.05[0.69-1.58] | 0.8247 |
| 2/3 | 13(10) | 2.07[1.64-NA] | 2.98[1.52-5.83] | 0.0014 |
| **Age, years** | 181(109) |  | 1(0.98-1.01) | 0.6994 |
| **Gender** |  |  |  | 0.1811 |
| Female | 45(24) | 31.03[9.43-NA] |  |  |
| Male | 136(85) | 11.49[6.9-22.46] | 1.35[0.86-2.13] | 0.1929 |
| **Stage** |  |  |  | P<0.0001 |
| M0/M1a | 53(37) | 8.44[4.07-22.46] |  |  |
| M1b | 55(21) | NA[41.02-NA] | 0.4[0.24-0.69] | 9e-04 |
| M1c | 43(25) | 14.48[5.48-NA] | 0.75[0.45-1.24] | 0.2629 |
| M1d | 30(26) | 5.37[1.71-9.43] | 1.72[1.04-2.85] | 0.0335 |

LDH, Lactate Dehydrogenase. NLR, neutrophil-lymphocyte ratio. REC, relative eosinophil count. RLC, relative lymphocyte count. ECOG, Eastern Cooperative Oncology Group.