**Supplementary Table 1. Univariate analysis of PFS2 and OS in mRCC patients (n = 110)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **PFS2** | | **OS** | |
|  | **HR(95%CI)** | **P value** | **HR(95%CI)** | **P value** |
| **Gender** |  |  |  |  |
| Male vs. Female | 0.955(0.543-1.680) | 0.731 | 1.368(0.754-2.483) | 0.191 |
| **Age** |  |  |  |  |
| ≥65y vs. <65y | 0.947(0.480-1.869) | 0.875 | 1.092(0.510-2.336) | 0.821 |
| **BMI** |  |  |  |  |
| ≥24 vs. <24 | 0.874(0.517-1.475) | 0.613 | 0.903(0.503-1.620) | 0.731 |
| **Pathological type** |  |  |  |  |
| ccRCC vs. non-ccRCC | 0.780(0.091-6.674) | 0.856 | 0.773(0.385-1.553) | 0.826 |
| **ISUP grade** |  |  |  |  |
| ≥3 vs. <3 | 1.099(0.618-1.952) | 0.749 | 1.399(0.737-2.654) | 0.305 |
| **pT Stage** |  |  |  |  |
| ≥3 vs. <3 | 1.589(0.946-2.670) | 0.080 | 1.528(0.862-2.709) | 0.147 |
| **Metastatic sites (Yes vs No)** |  |  |  |  |
| Lung | 1.921(1.092-3.378) | 0.023\* | 1.892(1.014-3.528) | 0.045\* |
| Lymph node | 0.823(0.458-1.480) | 0.516 | 0.677(0.316-1.449) | 0.315 |
| Bone | 1.443(0.826-2.519) | 0.197 | 2.334(1.279-4.260) | 0.006\* |
| Liver | 1.564(0.790-3.097) | 0.199 | 1.260(0.534-2.975) | 0.598 |
| Brain | 1.081(0.429-2.723) | 0.869 | 1.415(0.507-3.950) | 0.508 |
| Others | 2.681(1.341-5.362) | 0.005\* | 4.606(1.571-13.504) | 0.005\* |
| **Number of metastatic sites**  <2 vs. ≥2 | 0.608(0.367-0.939) | 0.036\* | 0.446(0.253-0.785) | 0.004\* |
| **First-line treatment** |  |  |  |  |
| Sunitinib vs. Sorafenib | 0.665(0.359-1.234) | 0.212 | 0.543(0.285-1.131) | 0.922 |
| **Length of PFS1 time** |  |  |  |  |
| <9 vs. ≥9 mo | 1.764(1.046-2.974) | 0.033\* | 1.190(0.678-2.087) | 0.545 |
| **IMDC risk stratification at initial second -line treatment** |  |  |  |  |
| Favorable | Ref. | Ref. | Ref. | Ref. |
| Intermediate | 2.224(0.963-5.139) | 0.061 | 6.465(1.500-27.866) | 0.012\* |
| Poor | 5.196(2.184-12.363) | 0.519 | 35.502(7.834-160.894) | <0.00\* |
| **Second-line treatment** |  |  |  |  |
| ICI plus TKI vs. TKI alone | 0.489(0.286-0.838) | 0.009\* | 0.485(0.259-0.906) | 0.023\* |

BMI: body mass index; ccRCC: clear cell renal cell cancer; non-ccRCC: including papillary, chromophobe and other types of RCC; IMDC: International Metastatic Renal-Cell Carcinoma Database Consortium; TKI, tyrosine kinase inhibitors; ICI, immune checkpoint inhibitors

\*p<0.05