**Supplementary Table A.** Systemic treatment: Characterization and description.

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| **Systemic treatment for the Stage IV tumor**, n (%)  Yes  No | **297 (100.0%)**  265 (89.2%)  32 (10.8%) |
| **Time elapsed between start of systemic treatment and histologic diagnosis of Stage IV NSCLC (days)**1, n (%)  Median (P25; P75) | **260 (100%)**  31.00 (22.00 ; 43.00) |
| **Treatment decision time**2, n (%)  Previous to PD-L1 testing results  After to PD-L1 testing results | **257 (100.0%)**  19 (7.4%)  238 (92.6%) |
| **Type of systemic treatment – categories**3 n (%)  Platinum-doublets  Chemotherapy (CT) monotherapy  Platinum-doublet-Antiangiogenic  IO monotherapy  Platinum-doublet- IO  IO-IO | **265 (100.0%)**  142 (53.6%)  5 (1.9%)  1 (0.4%)  71 (26.8%)  39 (14.7%)  6 (2.3%) |
| **Type of systemic treatment** n (%)  Carboplatin + nab-paclitaxel  Cisplatin + pemetrexed  Carboplatin + pemetrexed  Cisplatin + paclitaxel  Carboplatin + paclitaxel  Cisplatin + gemcitabine  Carboplatin + gemcitabine  Vinorelbine monotherapy  Pembrolizumab monotherapy  Atezolizumab monotherapy  Combo immunotherapy + chemotherapy4  Combo immunotherapy + immunotherapy5  Other6 | **265 (100.0%)**  2 (0.8%)  38 (14.3%)  50 (18.9%)  1 (0.4%)  14 (5.3%)  8 (3.0%)  8 (3.0%)  1 (0.4%)  66 (24.9%)  2 (0.8%)  39 (14.7%)  6 (2.3%)  30 (11.3%) |
| Table A summarizes all the treatment schemes used at the time of the study to show the different options and preferences in Spain:  *1 Difference in days between Date of systemic treatment start and Date of diagnosis (missing results, n = 5)*  *2 Treatment decision previous or after to PD-L1 testing results (missing results, n = 8)*  *3Based on the following grouping: - Platinum-doublets: cisplatin + nab-paclitaxel; carboplatin + nab-paclitaxel; cisplatin + pemetrexed; carboplatin + pemetrexed; cisplatin + paclitaxel; carboplatin + paclitaxel; cisplatin + gemcitabine; carboplatin + gemcitabine; carboplatin + vinorelbine; cisplatin + vinorelbine; carboplatin + etoposide; cisplatin + etoposide; carboplatin + docetaxel  - Chemotherapy (CT) monotherapy: gemcitabine monotherapy; vinorelbine monotherapy; paclitaxel monotherapy; docetaxel; pemetrexed, carboplatin - Platinum-doublet-Antiangiogenic: cisplatin + paclitaxel + bevacizumab; carboplatin + paclitaxel + bevacizumab; cisplatin + gemcitabine + bevacizumab; carboplatin + gemcitabine + bevacizumab; carboplatin + pemetrexed + bevacizumab - IO monotherapy: pembrolizumab monotherapy; nivolumab monotherapy; atezolizumab monotherapy; eftilagimod monotherapy - Platinum-doublet-IO - IO-IO - Platinum-doublet-Antiangiogenic-IO: cisplatin + paclitaxel + bevacizumab + atezolizumab; carboplatin + paclitaxel + bevacizumab + atezolizumab - IO-Antiangiogenic: atezolizumab + bevacizumab*  *4 Combo immunotherapy + chemotherapy (n=39): n=24 Carboplatin + Pemetrexed + Pembrolizumab; n=11 Cisplatin + Pemetrexed + Pembrolizumab; n=1 Carboplatin + Paclitaxel + Pembrolizumab; n=1 Carboplatin + Pemetrexed + Atezolizumab; n=1 Cisplatin + Pemetrexed + Pembrolizumab + Canakinumab; n=1 Pemetrexed + Pembrolizumab*  *5 Combo immunotherapy + immunotherapy (n=6): n=6 Pembrolizumab + Eftilagimod*  *6 Other systemic treatments (n=30): n=14 Carboplatin + Vinorelbine; n=4 Cisplatin + Vinorelbine; n=1 Eftilagimod; n=2 Carboplatin; n=1 Carboplatin + Docetaxel; n=1 Carboplatin + Etoposide; n=1 Cisplatin + Etoposide; n=1 Docetaxel; n=1 INCMGA0012 (immunotherapy); n=1 NCMGA00012 (clinical trial immunotherapy); n=1 Pemetrexed; n=1 Carboplatin + Pemetrexed + Bevacizumab; n=1 Atezolizumab + Bevacizumab* | |

**Supplementary Table B.** PD-L1 expression by clinico-pathological characteristics.

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| --- | --- | --- | --- | --- |
|  | **PD-L1**  **<1%** | **PD-L1**  **1-49%** | **PD-L1**  **≥50%** | **p-value** |
| **Total Patients n=287** | 115 (40.1) | 77 (26.8) | 92 (32.1) |
| **Gender, n=284 *(%)*** | | | | |
| Male | 89 (40.8) | 61 (28) | 68 (31.2) | 0.7029 |
| Female | 26 (39.4) | 16 (24.2) | 24 (36.4) |
| **p-value1** | 0.8352 | 0.5492 | 0.4319 |  |
| **Age, n=284 *(%)*** | | | | |
| ≤75 | 93 (41.3) | 63 (28) | 69 (30.7) | 0.4720 |
| >75 | 22 (37.3) | 14 (23.7) | 23 (39) |
| **p-value1** | 0.5734 | 0.5112 | 0.2244 |  |
| **Smoking history, n=284 *(%)*** | | | | |
| Never smoked | 11 (39.3) | 6 (21.4) | 11 (39.3) | 0.6989 |
| Smoker | 48 (42.1) | 34 (29.8) | 32 (28.1) |
| Former smoker | 54 (38.8) | 36 (25.9) | 49 (35.3) |
| **ECOG, n=282 *(%)*** | | | | |
| 0-1 | 78 (37.3) | 59 (28.2) | 72 (34.4) | 0.1196 |
| ≥2 | 37 (50.7) | 18 (24.7) | 18 (24.7) |
| **p-value1** | 0.0455 | 0.5552 | 0.1223 |  |
| **Histology, n=284 *(%)*** | | | | |
| Squamous | 16 (31.4) | 21 (41.2) | 14 (27.5) | **0.0433** |
| Non-squamous | 99 (42.5) | 56 (24) | 78 (33.5) |
| **p-value1** | 0.1429 | 0.0126 | 0.4048 |  |

*1 z-ratio, two independent proportions*