**Figure S1** Kaplan-Meier curves showing the prognostic value of LIPI for patients with mHSPC treated with either MAB or ADT plus ABI/DOC. (A) CFS for patients treated with MAB. (B) OS for patients treated with MAB. (C) CFS for patients treated with ABI/DOC. (D) OS for patients treated with ABI/DOC. LIPI, lung immune prognostic index; mHSPC, metastatic hormone-sensitive prostate cancer; CFS, castration-resistant prostate cancer free survival; OS, overall survival; MAB, maximal androgen blockade; ADT, androgen deprivation therapy; ABI, abiraterone; DOC, docetaxel.

**Table S1** Baseline characteristics of the patients with mHSPC and mCRPC after PSM

| Characteristics | Total, n (%) | LIPI-good, n (%) | LIPI-intermediate, n (%) | LIPI-poor, n (%) | P value |
|---|---|---|---|---|---|
| Propensity score-matched mHSPC cohort* | N=192 | N=64 | N=64 | N=64 | |
| Age (years), n (%) | | | | | 0.269 |
| ≥71 | 99 (51.6) | 37 (57.8) | 28 (43.8) | 34 (53.1) | |
| <71 | 93 (48.4) | 27 (42.2) | 36 (56.3) | 30 (46.9) | |
| ISUP group | | | | | 0.705 |
| 1-3 | 27 (14.1) | 8 (12.5) | 10 (15.6) | 9 (14.1) | |
| 4 | 32 (16.7) | 14 (21.9) | 8 (12.5) | 10 (15.6) | |
| 5 | 133 (69.3) | 42 (65.6) | 46 (71.9) | 45 (70.3) | |
| Visceral metastases | | | | | 0.620 |
| Yes | 16 (8.3) | 7 (10.9) | 4 (6.3) | 5 (7.8) | |
| No | 176 (91.7) | 57 (89.1) | 60 (93.8) | 59 (92.2) | |
| ECOG score | | | | | 0.490 |
| 0-1 | 160 (83.3) | 53 (82.8) | 51 (79.7) | 56 (87.5) | |
| ≥2 | 32 (16.7) | 11 (17.2) | 13 (20.3) | 8 (12.5) | |
| PSA (ng/mL) | | | | | 0.454 |
| ≥100 | 145 (75.5) | 51 (79.7) | 49 (76.6) | 45 (70.3) | |
| <100 | 47 (24.5) | 13 (20.3) | 15 (23.4) | 19 (29.7) | |
| HGB (g/L) | | | | | 0.296 |
| ≥120 | 81 (42.2) | 30 (46.9) | 22 (34.4) | 29 (45.3) | |
| <120 | 111 (57.8) | 34 (53.1) | 42 (65.6) | 35 (54.7) | |
| ALP (IU/L) | | | | | 0.713 |
| ≥160 | 85 (44.3) | 27 (43.3) | 27 (42.2) | 31 (48.4) | |
| <160 | 107 (55.7) | 37 (57.8) | 37 (57.8) | 33 (51.6) | |
| Treatments | | | | | 0.214 |
| MAB | 181 (94.3) | 63 (98.4) | 59 (92.2) | 59 (92.2) | |
| ABI/DOC | 11 (5.7) | 1 (1.6) | 5 (7.8) | 5 (7.8) | |
| Propensity score-matched mCRPC cohort# | N=122 | N=61 | LIPI-intermediate and poor (N=61), n (%) | | P value |
| Age (years) | | | | | 0.717 |
| ≥71 | 62 (50.8) | 30 (49.2) | 32 (52.5) | | |
| <71 | 60 (49.2) | 31 (50.8) | 29 (47.5) | | |
| ISUP group | | | | | 0.680 |
| 1-3 | 14 (11.5) | 7 (11.5) | 7 (11.5) | | |
| 4 | 28 (23.0) | 12 (19.7) | 16 (26.2) | | |
| 5 | 80 (65.6) | 42 (68.9) | 38 (62.3) | | |
| Visceral metastases | | | | | 0.610 |
| Yes | 18 (14.8) | 10 (16.4) | 8 (13.1) | | |
| No | 104 (85.2) | 51 (83.6) | 53 (86.9) | | |
| CFS (months) | | | | | 0.584 |
| <12 | 53 (43.4) | 25 (41.0) | 28 (45.9) | | |
| ≥12 | 69 (56.6) | 36 (59.0) | 33 (54.1) | | |
| ECOG score | | | | | 1.000 |
| 0-1 | 6 (4.9) | 3 (4.9) | 3 (4.9) | | |
| ≥2 | 116 (95.1) | 58 (95.1) | 58 (95.1) | | |
| PSA (ng/mL) | | | | | 0.717 |
| ≥12 | 58 (47.5) | 28 (45.9) | 30 (49.2) | | |
| <12 | 64 (52.5) | 33 (54.1) | 31 (50.8) | | |
| HGB (g/L) | | | | | 0.844 |
| ≥120 | 85 (69.7) | 43 (70.5) | 42 (68.9) | | |
| <120 | 37 (30.3) | 18 (29.5) | 19 (31.1) | | |
| ALP (IU/L) | | | | | 0.283 |
| ≥160 | 16 (13.1) | 10 (16.4) | 6 (13.1) | | |
| <160 | 106 (86.9) | 51 (83.6) | 55 (90.2) | | |

*, patients of the LIPI-Good group and the LIPI-Intermediate group were matched to men of the LIPI-Good group, respectively. #, due to the small sample size of the LIPI-Poor group, cases of the LIPI-Poor group were merged with those of the LIPI-Intermediate group, and then matched to men of the LIPI-Good group. mHSPC, metastatic hormone-sensitive prostate cancer; mCRPC, metastatic castration-resistant prostate cancer; PSM, propensity score matching; IQR, interquartile range; ISUP, International Society of Urological Pathology; ECOG, Eastern Cooperative Oncology Group; PSA, prostate specific antigen; HGB, hemoglobin; ALP, alkaline phosphatase; ABI, abiraterone; DOC, docetaxel; MAB, maximum androgen blockade; LIPI, Lung Immune Prognostic Index.