

Supporting Information: Table S1 Numeric coding of categorical variables.

Clinical features	Number
Gender	
Female	0
Male	1
Smoking	
No	0
Yes	1
Brain metastasis	
No	0
Yes	1
Liver metastasis	
No	0
Yes	1
Bone metastasis	
No	0

Yes	1
Adrenal metastasis	
No	0
Yes	1
T	
T1	0
T2	1
T3	2
T4	3
N	
N0	0
N1	1
N2	2
N3	3
M	
M0	0
M1	1
VALG stage	
Limited-stage	0
Extensive-stage	1
TNM Stage	
I	0
II	1
III	2
IV	3
Therapy	
Immu	0
Immu + Chemo	1
Immu + Antiangio	2
Immu + Chemo + Antiangio	3
Immunotherapy lines	
First line	0
Subsequent lines	1

VALG, Veterans Administration Lung Study Group. Immu, immunotherapy. Chemo, chemotherapy. Antiangio, antiangiogenic therapy.

Supporting Information: Table S2 Comparison of clinical features between the discovery cohort and the validation cohort.

	Discovery cohort (<i>n</i> = 112)	Validation cohort (<i>n</i> = 28)	Test method	<i>p</i> value
Age			Student's <i>t</i>	0.3303
Mean (StD)	62.37 (8.33)	60.71 (6.49)		
Gender			Chi-square	0.2272
Female	28 (25.00)	4 (14.29)		
Male	84 (75.00)	24 (85.71)		
Smoking			Chi-square	0.2272
No	28 (25.00)	4 (14.29)		
Yes	84 (75.00)	24 (85.71)		
ECOG PS score			Fisher's exact	1.0000
0–1	102 (91.07)	26 (92.86)		
≥ 2	10 (8.93)	2 (7.14)		
Brain metastasis			Chi-square	0.3291
No	82 (73.21)	23 (82.14)		
Yes	30 (26.79)	5 (17.86)		
Liver metastasis			Chi-square	0.7513
No	89 (79.46)	23 (82.14)		
Yes	23 (20.54)	5 (17.86)		
Bones metastasis			Chi-square	0.7061
No	80 (71.43)	21 (75.00)		
Yes	32 (28.57)	7 (25.00)		
Adrenal metastasis			Chi-square	0.7480
No	91 (81.25)	22 (78.57)		
Yes	21 (18.75)	6 (21.43)		
T			Fisher's exact	0.5674
T1	8 (7.14)	4 (14.29)		
T2	31 (27.68)	9 (32.14)		
T3	15 (13.39)	3 (10.71)		
T4	58 (51.79)	12 (42.86)		
N			Fisher's exact	0.0707
N0	7 (6.25)	0 (0)		
N1	3 (2.68)	3 (10.71)		
N2	45 (40.18)	15 (53.57)		
N3	57 (50.89)	10 (35.71)		
M			Fisher's exact	0.2156
M0	13 (11.61)	6 (21.43)		

M1	99 (88.39)	22 (78.57)		
VALG stage			Fisher's exact	0.7065
Limited-stage	9 (8.04)	3 (10.71)		
Extensive-stage	103 (91.96)	25 (89.29)		
Stage			Fisher's exact	0.3532
IA	1 (0.89)	0 (0)		
IB	1 (0.89)	0 (0)		
IIB	2 (1.79)	2 (7.14)		
IIIA	1 (0.89)	1 (3.57)		
IIIB	3 (2.68)	1 (3.57)		
IIIC	5 (4.46)	2 (7.14)		
IVA	40 (35.71)	6 (21.43)		
IVB	59 (52.68)	16 (57.14)		
Mutation			Fisher's exact	0.0542
TP53	0 (0)	2 (7.14)		
TP53/PIK3CA	1 (0.89)	0 (0)		
ROS1	2 (1.79)	0 (0)		
KRAS/TP53	0 (0)	1 (3.57)		
Negative	8 (7.14)	1 (3.57)		
Unknown	101 (90.18)	24 (85.71)		
Therapy			Fisher's exact	0.1151
Immu	2 (1.79)	0 (0)		
Immu + Chemo	103 (91.96)	25 (89.29)		
Immu + Antiangio	5 (4.46)	0 (0)		
Immu + Chemo + Antiangio	2 (1.79)	3 (10.71)		
Immunotherapy lines			Chi-square	0.9275
First line	77 (68.75)	19 (67.86)		
Subsequent lines	35 (31.25)	9 (32.14)		
BOR			Fisher's exact	0.5221
CR	3 (2.68)	0 (0)		
PR	65 (58.04)	19 (67.86)		
SD	33 (29.46)	5 (17.86)		
PD	11 (9.82)	4 (14.29)		
PFS			Mann– Whitney U	0.3072
Median (IQR)	4.90 (2.60, 8.15)	6.45 (3.88, 8.38)		

Responder				Chi-square	0.3932
No	66 (58.93)	14 (50.00)			
Yes	46 (41.07)	14 (50.00)			
ORR				Chi-square	0.4858
No	44 (39.29)	9 (32.14)			
Yes	68 (60.71)	19 (67.86)			
DCR				Fisher's exact	0.5005
No	11 (9.82)	4 (14.29)			
Yes	101 (90.18)	24 (85.71)			

Std, standard deviation. ECOG PS score, Eastern Cooperative Oncology Group performance status score. IQR, interquartile range. VALG, Veterans Administration Lung Study Group. Immu, immunotherapy. Chemo, chemotherapy. Antiangio, antiangiogenic therapy. BOR, best of response. CR, complete response. PR, partial response. SD, stable disease. PD, progressive disease. PFS, progression-free survival. Responder, PFS > 6 months. ORR, objective response rate. DCR, disease control rate.

Supporting Information: Table S3 Univariate Cox regression results to locate the influencing factors of free progression-free survival.

	Beta	Z score	p value	Hazard ratio (HR)		
				HR	Lower 95% CI	Upper 95% CI
Age	-0.0199	-1.452 7	0.1463	0.9803	0.9544	1.0070
Gender						
Female	Reference					
Male	0.3122	1.1879	0.2349	1.3664	0.8164	2.2868
Smoking						
No	Reference					
Yes	0.3797	1.4134	0.1575	1.4618	0.8634	2.4748
ECOG PS score						
0-1	Reference					
≥ 2	-0.4410	-0.859 8	0.3899	0.6434	0.2354	1.7583
Brain metastasis						
No	Reference					
Yes	0.3028	1.2449	0.2132	1.3536	0.8404	2.1803
Liver metastasis						
No	Reference					

Yes	0.4702	1.7159	0.0862	1.6004	0.9353	2.7383
Bones metastasis						
No	Reference					
Yes	0.3485	1.4497	0.1471	1.4169	0.8846	2.2695
Adrenal metastasis						
No	Reference					
Yes	0.8252	3.2671	0.0011**	2.2823	1.3912	3.7443
VALG stage						
Limited-stage	Reference					
Extensive-stage	0.8717	1.6961	0.0899	2.3910	0.8732	6.5472
Therapy						
Immu	Reference					
Immu + Antiangio	0.6829	0.7403	0.4591	1.9796	0.3246	12.0712
Immu + Chemo	-0.8891	-1.234 1	0.2172	0.4110	0.1001	1.6871
Immu + Chemo + Antiangio	-0.2543	-0.291 6	0.7706	0.7755	0.1404	4.2832
Immunotherapy lines						
First line	Reference					
Subsequent lines	0.3840	1.6590	0.0971	1.4682	0.9327	2.3111

HR, hazard ratio. CI, confidence interval. ECOG PS score, Eastern Cooperative Oncology Group performance status score. VALG, Veterans Administration Lung Study Group. Immu, immunotherapy. Antiangio, antiangiogenic therapy. Chemo, chemotherapy. ** $p < 0.01$.