

## Supplementary materials

**Table S1.** Patient characteristics between different subgroups.

**Figure S1.** (A) Percentage change according to RECIST and the NPI; (B) The NPI in different RECIST groups. NPI, new prognostic index; RECIST, Response Evaluation Criteria in Solid Tumors; Based on RECIST, PR: partial response; SD: stable disease; and PD: progressive disease.

**Figure S2.** ROC curves of the NPI for RECIST (Figure S2A: PR and SD; S2B: SD and PD). NPI, new prognostic index; Based on the RECIST, PR: partial response; SD: stable disease; and PD: progressive disease; RECIST, Response Evaluation Criteria in Solid Tumors; ROC, receiver operating characteristic.

Figure S3. Survival analysis in subgroups according to PERCIST criteria in the training and validation set. MST, median survival time; PERCIST: Positron Emission Tomography Response Criteria in Solid Tumors. Based on PERCIST, PMR: partial response; SMD: stable disease; and PMD: progressive disease

Figure S4. Survival analysis based on RECIST and NPI stratified by EGFR-TKI, chemotherapy and chemoradiotherapy cohorts. EGFR, epidermal growth factor receptor; MST, median survival time; NPI, new prognostic index; RECIST, Response Evaluation Criteria in Solid Tumors; TKI, tyrosine kinase inhibitor. Based on RECIST, PR: partial response; SD: stable disease; and PD: progressive disease. Based on the NPI, NPR: partial response; NSD: stable disease; and NPD: progressive disease.

Table S1. Patient characteristics between different subgroups.

Variables	RECIST				NPI			
	PR, No.(%) (n = 44)	SD, No.(%) (n = 63)	PD, No.(%) (n = 9)	p values	NPR, No.(%) (n = 50)	NSD, No.(%) (n = 57)	NPD, No.(%) (n = 9)	p values
Age (Median, range), years	63.0 (32-81)	62.0 (28-88)	53.0 (34-64)	<b>0.046</b>	63.0 (39-88)	61.0 (28-87)	53.0 (34-78)	0.162
Gender				0.487				0.333
Male	37 (84.1)	48 (76.2)	8 (88.9)		39 (78.0)	45 (78.9)	9 (100.0)	
Female	7 (15.9)	15 (23.8)	1 (11.1)		11 (22.0)	12 (21.1)	0 (0.0)	
Smoking				0.744				0.549
Yes	26 (59.1)	36 (57.1)	4 (44.4)		27 (54.0)	35 (61.4)	4 (44.4)	
No	18 (40.9)	27 (42.9)	5 (55.6)		23 (46.0)	22 (38.6)	5 (55.6)	
Stage				0.333				0.685
IIIB	11 (25.0)	10 (15.9)	3 (33.3)		12 (24.0)	11 (19.3)	1 (11.1)	
IV	33 (75.0)	53 (84.1)	6 (66.7)		38 (76.0)	46 (80.7)	8 (88.9)	
Histology				<b>0.001</b>				<b>0.009</b>
ADC	22 (50.0)	53 (84.1)	7 (77.8)		28 (56.0)	47 (82.5)	7 (77.8)	
SCC	22 (50.0)	10 (15.9)	2 (22.2)		22 (44.0)	10 (17.5)	2 (22.2)	
Time interval between PET <sub>0</sub> and PET <sub>1</sub> (Mean ± SD), months	2.5 ± 0.8	2.3 ± 0.8	2.7 ± 0.9	0.182	2.5 ± 0.8	2.3 ± 0.8	2.6 ± 1.1	0.317
EGFR types				0.270				0.223
Deletion19/ L858R	11 (25.0)	20 (31.7)	3 (33.3)		15 (30.0)	14 (24.6)	5 (55.6)	
Negative	19 (43.2)	34 (54.0)	5 (55.6)		22 (44.0)	32 (56.1)	4 (44.4)	
Unknown	14 (31.8)	9 (14.3)	1 (11.1)		13 (26.0)	11 (19.3)	0 (0.0)	
Treatment				0.472				0.100
EGFR-TKI	11 (25.0)	16 (25.4)	4 (44.4)		13 (26.0)	13 (22.8)	5 (55.6)	
CT	29 (66.0)	45 (71.4)	5 (55.6)		32 (64.0)	43 (75.4)	4 (44.4)	
CRT	4 (9.0)	2 (3.2)	0 (0.0)		5 (10.0)	1 (1.8)	0 (0.0)	

ADC; adenocarcinoma; CRT, chemoradiotherapy; CT: chemotherapy; EGFR, epidermal growth factor receptor; MTV, metabolic tumor volume; NPI, new prognostic index; NPR: partial response based on NPI; NSD: stable disease based on NPI; NPD: progressive disease based on NPI; PD, progressive disease; PET, positron emission tomography; PR, partial response; RECIST, response evaluation criteria in solid tumors; SCC, squamous cell carcinoma; SD, standard deviation; TKI, tyrosine kinase inhibitor.

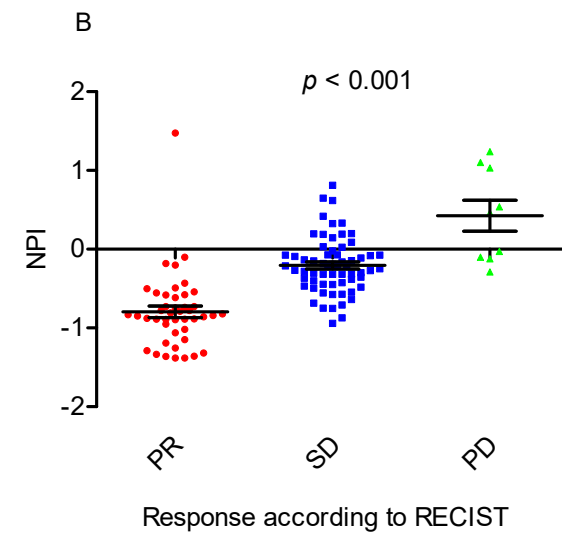
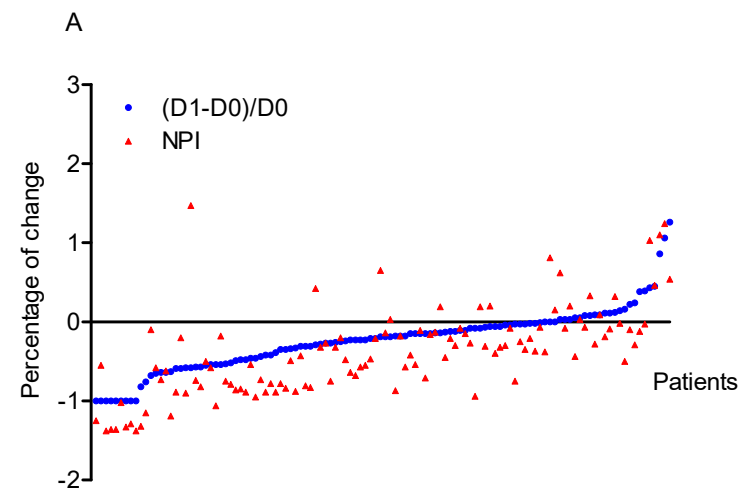


Figure S1

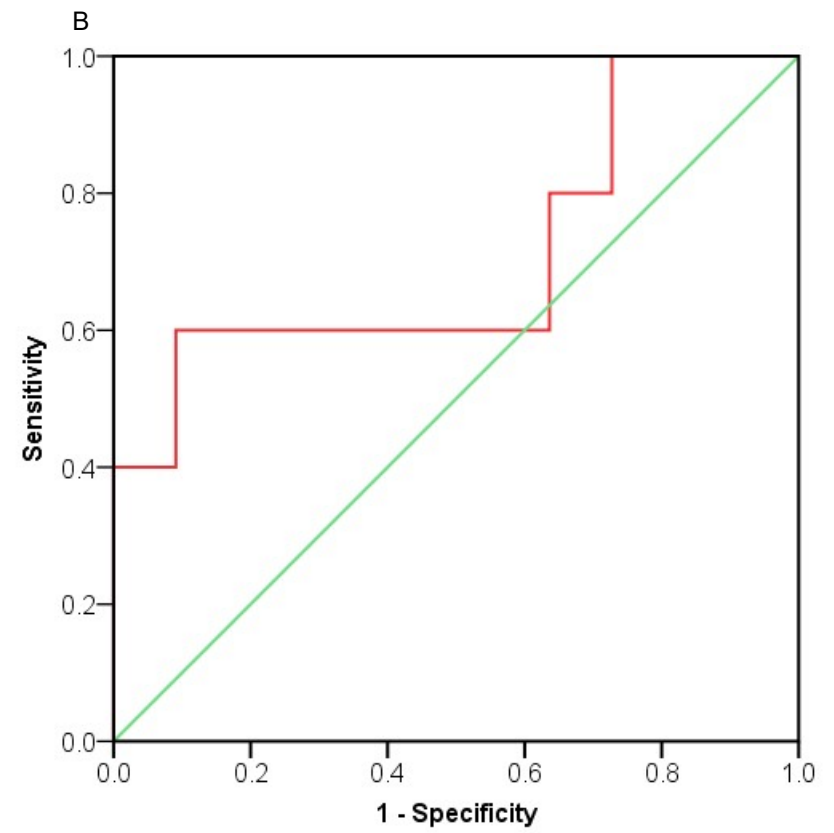
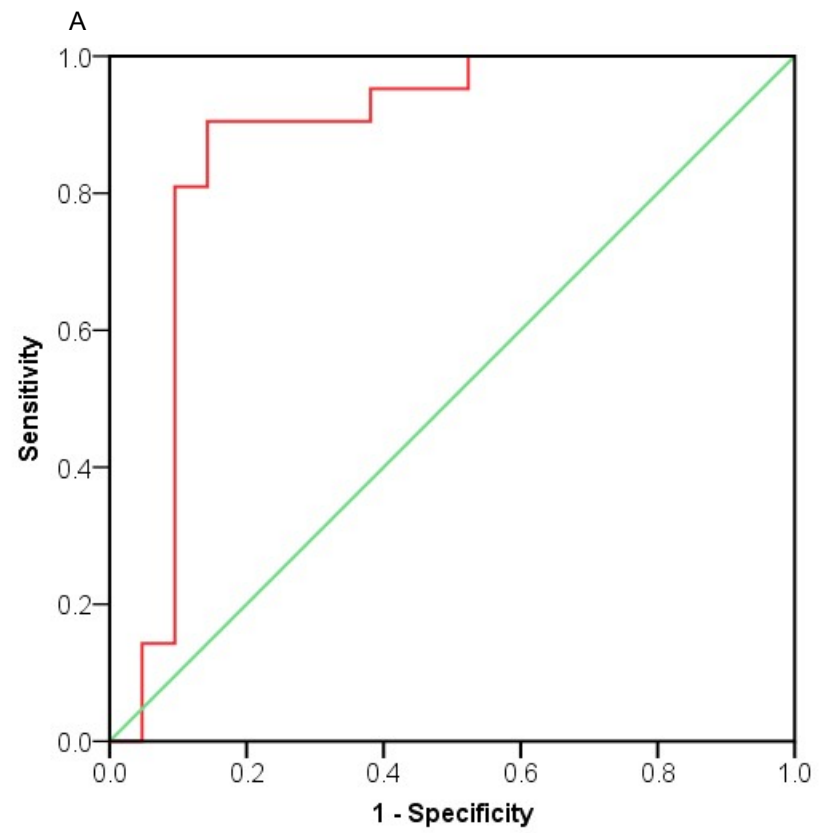


Figure S2

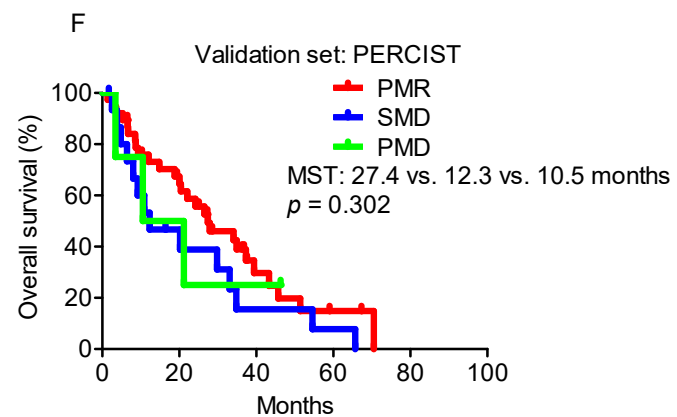
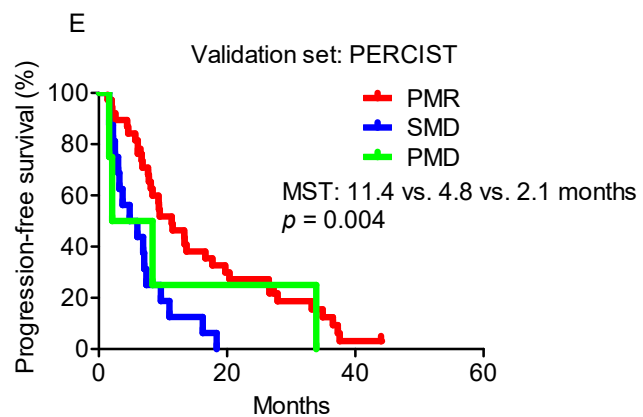
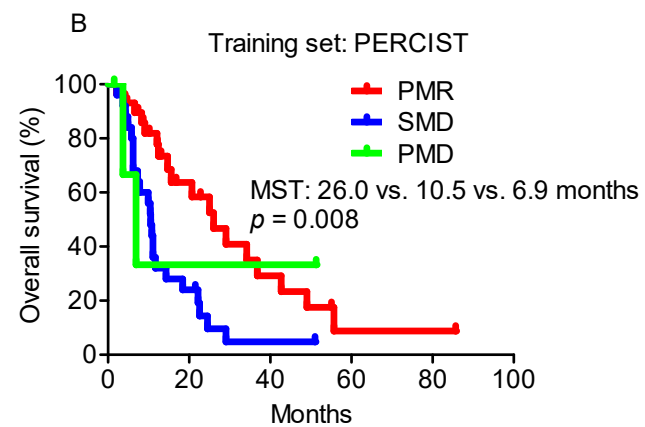
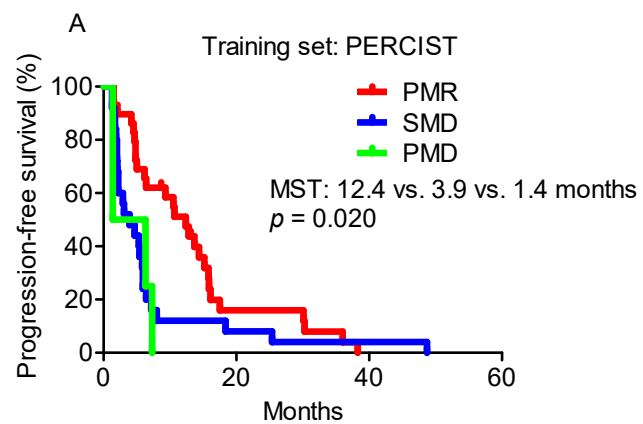


Figure S3

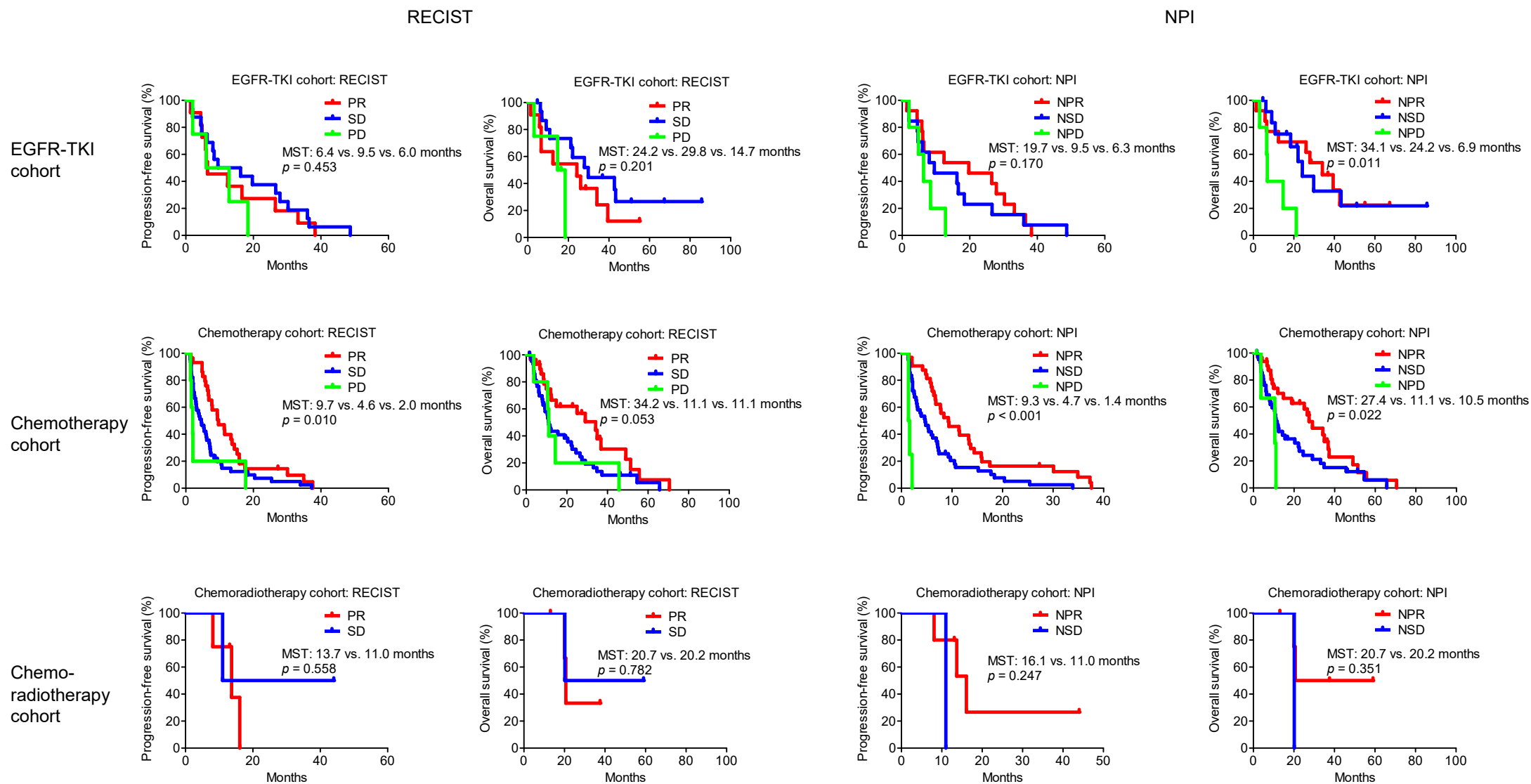


Figure S4