

**Table S1** CT scanning systems and parameters at the three medical centers

CT scanning systems and Parameters	Medical Center 1	Medical Center 2	Medical Center 3
Manufacturer	PHILIPS	GE	PHILIPS
Tube voltage (kVp)	140	140	140
Effective power of tube (mA)	Auto	Auto	Auto
Matrix	512×512	512×512	512×512
Slicer thickness (mm)	0.625	0.625	0.625
Rotation time (/s)	0.4	0.5	0.4

Medical Center 1, The Second Affiliated Hospital of Guizhou Medical University; Medical Center 2, Guiyang Public Health Clinical Center; Medical Center 3, Qiandongnan Prefecture People's Hospital. CT, computed tomography.

**Table S2** Univariate and multivariate analysis of radiochemotherapy resistance in the training cohorts

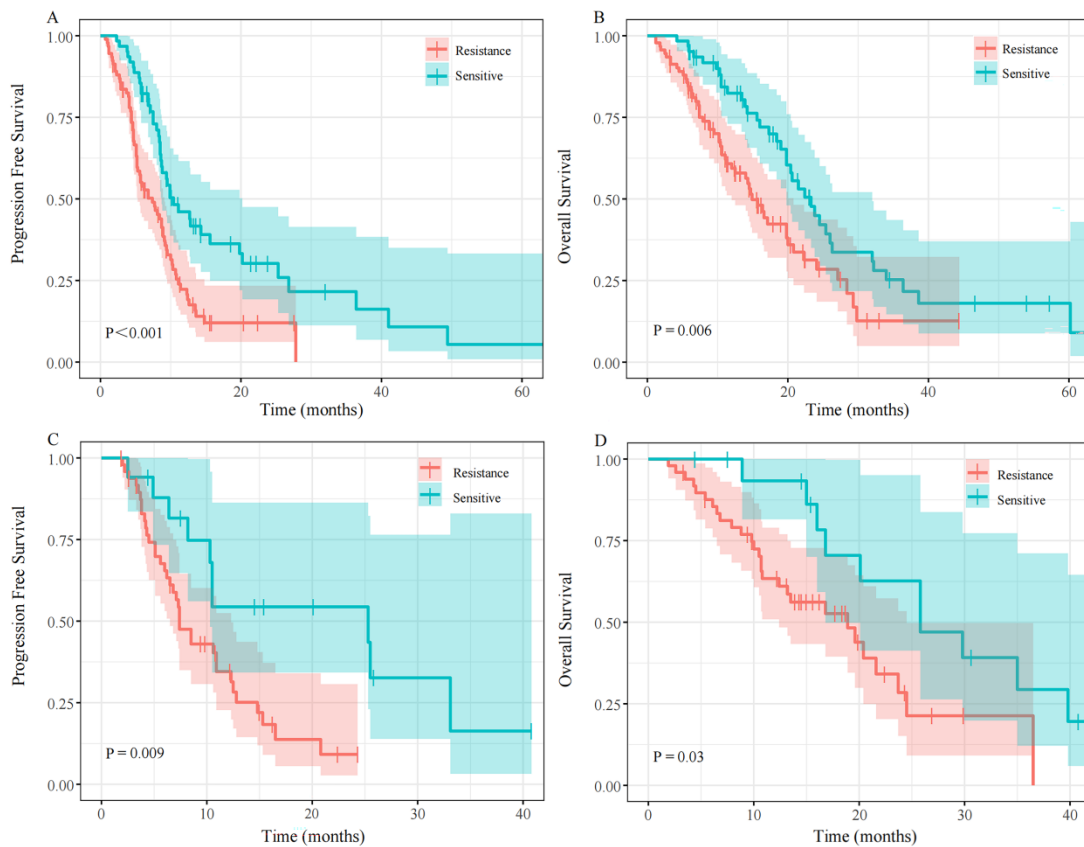
Variables	Univariate analysis		Multivariate analysis	
	OR (95% CI)	P value	OR (95% CI)	P value
Age	0.981 (0.947–1.015)	0.27	–	–
Sex				
Male	1.000		–	–
Female	1.128 (0.491–2.588)	0.78	–	–
Nationality				
Non-minority	1.000		–	–
Minority	1.048 (0.547–2.009)	0.89	–	–
Child-Pugh				
A	1.000		–	–
B	0.667 (0.091–4.862)	0.69	–	–
Smoking				
No	1.000		–	–
Yes	0.877 (0.452–1.701)	0.70	–	–
Diabetes				
No	1.000		–	–
Yes	0.471 (0.155–1.432)	0.18	–	–
HBV				
No	1.000		–	–
Yes	0.655 (0.181–2.365)	0.52	–	–
Tuberculosis				
No	1.000		–	–
Yes	1.138 (0.391–3.310)	0.81	–	–
T stage				
T1–2	1.000		1.000	
T3–4	0.497 (0.236–1.050)	0.07	0.432 (0.199–0.934)	0.03
N stage				
N0–1	1.000		–	–
N2–3	1.202 (0.576–2.508)	0.62	–	–
M stage				
M0	1.000		–	–
M1	1.713 (0.880–3.337)	0.11	–	–
TNM stage				
I–II	1.000		–	–
III	1.222 (0.328–4.555)	0.77	–	–
IV	2.048 (0.534–7.859)	0.30	–	–
Metastatic status				
Polymetastasis	1.000		–	–
Oligometastasis	0.547 (0.169–1.775)	0.32	–	–
Histology				
Squamous carcinoma	1.000		–	–
Adenocarcinoma	1.229 (0.622–2.428)	0.55	–	–
other	0.717 (0.137–3.747)	0.69	–	–
Treatment mode				
RT	1.000		–	–
CCRT	0.822 (0.365–1.855)	0.64	–	–
SCRT	0.762 (0.249–2.331)	0.63	–	–
RT Technique				
IMRT	1.000		–	–
IGRT	0.932 (0.455–1.908)	0.85	–	–
3D-CRT	0.964 (0.239–3.898)	0.96	–	–
Prescribed dose (Gy)	1.053 (0.982–1.129)	0.15	–	–
KPS	0.958 (0.909–1.011)	0.12	–	–
CEA	0.997 (0.994–1.001)	0.10	–	–
Hb	0.979 (0.959–0.998)	0.03	0.975 (0.956–0.995)	0.02

3D-CRT, three-dimensional conformal radiotherapy; CCRT, concurrent chemoradiotherapy; CEA, carcinoembryonic antigen; CI, confidence interval; HBV, hepatitis B virus; Hb, hemoglobin; IGRT, image-guided radiotherapy; IMRT, intensity-modulated radiation therapy; KPS, Karnofsky Performance Status; OR, odds ratio; RT, radiotherapy; SCRT, sequential chemoradiotherapy.

**Table S3** Performance of the different models

Models	Training cohort				Validation cohort			
	AUC (95% CI)	Acc	Sen	Spe	AUC (95% CI)	Acc	Sen	Spe
Clinical	0.675 (0.585–0.765)	0.630	0.772	0.613	0.612 (0.471–0.753)	0.681	0.449	0.824
RM <sub>GTV</sub>	0.694 (0.611–0.778)	0.656	0.587	0.758	0.613 (0.437–0.790)	0.727	0.653	0.706
DM <sub>GTV</sub>	0.746 (0.667–0.826)	0.701	0.728	0.677	0.683 (0.534–0.833)	0.682	0.551	0.824
DM <sub>50Gy</sub>	0.764 (0.687–0.841)	0.708	0.924	0.500	0.729 (0.568–0.889)	0.697	0.714	0.765
RDM	0.836 (0.773–0.899)	0.760	0.717	0.833	0.748 (0.617–0.879)	0.697	0.755	0.647
Combined model	0.844 (0.781–0.907)	0.799	0.880	0.677	0.753 (0.618–0.887)	0.712	0.857	0.588

AUC, area under curve; CI, confidence interval; RM<sub>GTV</sub>, GTV radiomics model; DM<sub>GTV</sub>, GTV dosiomics model; DM<sub>50Gy</sub>, 50 Gy dosiomics model; RDM, radiomics-dosiomics model; Acc, accuracy; Sen, sensitivity; Spe, specificity.



**Figure S1** Kaplan-Meier analysis of survival outcomes in the radiochemotherapy-sensitive and radiochemotherapy-resistant groups. (A,B) Training cohort. (C,D) Validation cohort.  $P < 0.05$ : statistically significant difference.