Supplementary

Radiomic Features(n=396)					
First Order Histogram Features (n=42)	Morphological Features (n=9)	Second Order Texture Features (n=334)			GLZSM Features (n=11)
		Gray Level Co-occurrence Matrix (n=144)	Gray Level Run-length Matrix (n=180)	Haralick features (n=10)	Gray Level Zone Size Matrix (n=11)
1. Min Intensity 2. Max Intensity 3. Median Intensity 4. Mean Value 5. Std Deviation 6. Mean Deviation 7. Relative Deviation 8. Variance 9. Range 10. Volume Count 11. Voxel Value 12. RMS 13. Skewness 14. Kurtosis 15. Uniformity 16. Histogram Energy 17. Histogram Entropy 18. Frequency Size 19. Percentile x (x=5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65 ,70, 75, 80, 85, 90, 95) 20. Quantile y (y=0.025, 0.25, 0.5, 0.75, 0.975)	1. Sphericity 2. Surface Area 3. Volume CC 4. Volume MM 5. Surface Volume Ratio 6. Maximum 3D Diameter 7. Compactness 1 8. Compactness 2 9. Spherical Disproportion	1. GLCMEnergy 2. GLCMEntropy 3. Inertia 4. Correlation 5. InverseDifferenceMoment 6. ClusterShade 7. ClusterProminence 8. HaralickCorrelation *Angle=All, 0, 45, 90, 135, All_SD; *Offset=1, 4, 7	1. StortRunEmphasis 2. LongRunEmphasis 3. GrayLevelNonuniformity 4. RunLenghthNonuniformity 5. LowGrayLevelRunEmphasis 6. HighGrayLevelRunEmphasis 7. ShortRunLowGrayLevelEmphasis 8. ShortRunHighGrayLevelEmphasis 9. LongRunLowGrayLevelEmphasis 10. LongRunHighGrayLevelEmphasis *Angle=All, 0, 45, 90, 135, All_SD; *Offset=1, 4, 7	1. HaraEntroy 2. AngularSecondMoment 3. Contrast 4. HaraVariance 5. SumAverage 6. SumVariance 7. SumEntropy 8. DifferenceVariance 9. DiffereceEntropy 10. InverseDifferenceMoment	1. SmallAreaEmphasis 2. LargeAreaEmphasis 3. IntensityVariability 4. SizeZoneVariability 5. ZonePercentage 6. LowIntensityEmphasis 7. HighIntensityEmphasis 8. LowIntensitySmallAreaEmphasis 9. HighIntensitySmallAreaEmphasis 10. LowIntensityLargeAreaEmphasis 11. HighIntensityLargeAreaEmphasis

Figure S1 Radiomic features extracted from the T1c MR images. CC, cu mm cubic millimeter; MM, millimeter; GLCM, Grey Level Co-occurrence Matrix; GLZSM, gray level zone size matrix.

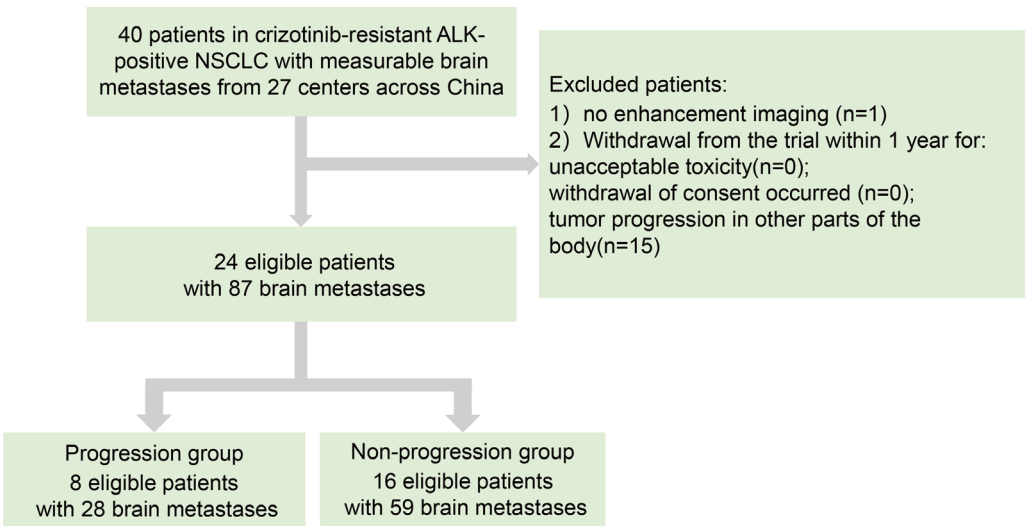

Figure S2 Flowchart of the study population and exclusion criteria.

http://dx.doi.org/10.21037/tlcr-20-361

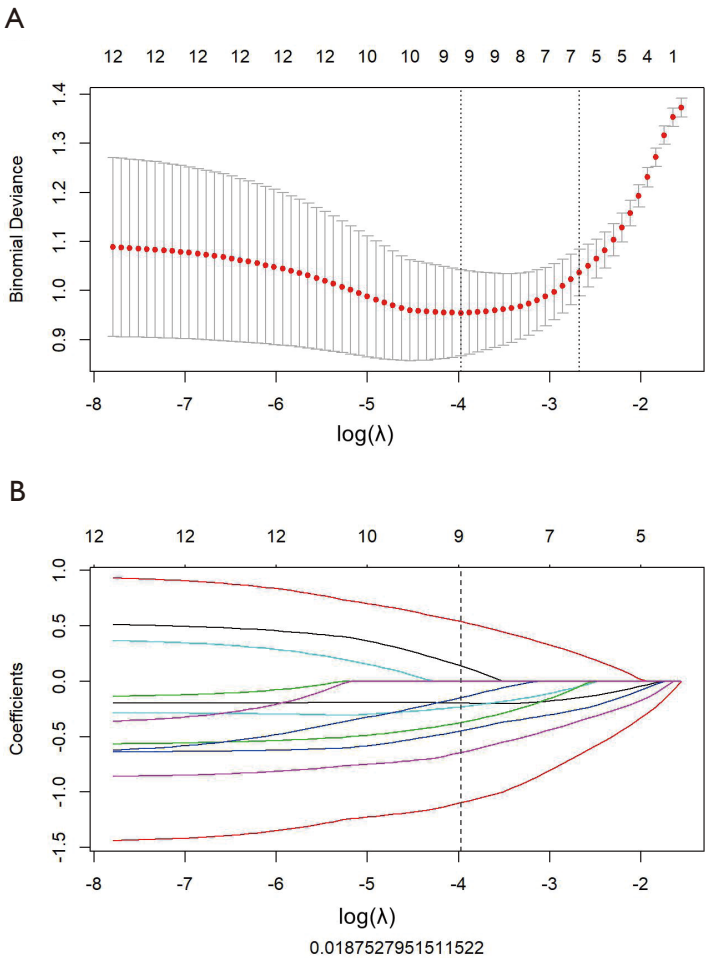

Figure S3 Radiomic feature selection using least absolute shrinkage and selection operator (LASSO) logistic regression. (A) Selection of the tuning parameter (λ) in the LASSO model via 10-fold cross-validation based on minimum criteria. Binomial deviances from the LASSO regression cross-validation procedure were plotted as a function of log(λ). The y-axis indicates binomial deviances. The lower x-axis indicates the log(λ). Numbers along the upper x-axis represent the average number of predictors. Red dots indicate average deviance values for each model with a given λ, and vertical bars through the red dots show the upper and lower values of the deviances. The vertical black lines define the optimal values of λ, where the model provides its best fit to the data. The optimal λ value of 0.019 with log(λ) =−3.92 was selected. (B) LASSO coefficient profiles of the 12 radiomic features. The dotted vertical line was plotted at the value selected using 10-fold cross-validation in (A). The nine resulting features with nonzero coefficients are indicated in the plot.

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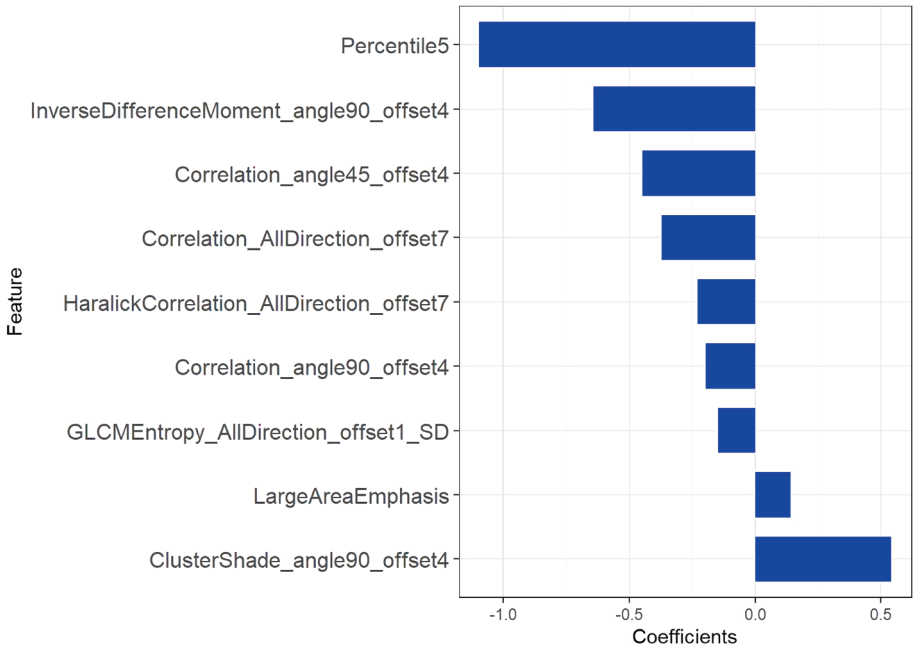

Figure S4 A histogram showing the role of individual features that contributed to the developed signature. The features that contributed to the radiomic signature are plotted on the y-axis, with their coefficients in the least absolute shrinkage and selection operator Cox analysis plotted on the x-axis.

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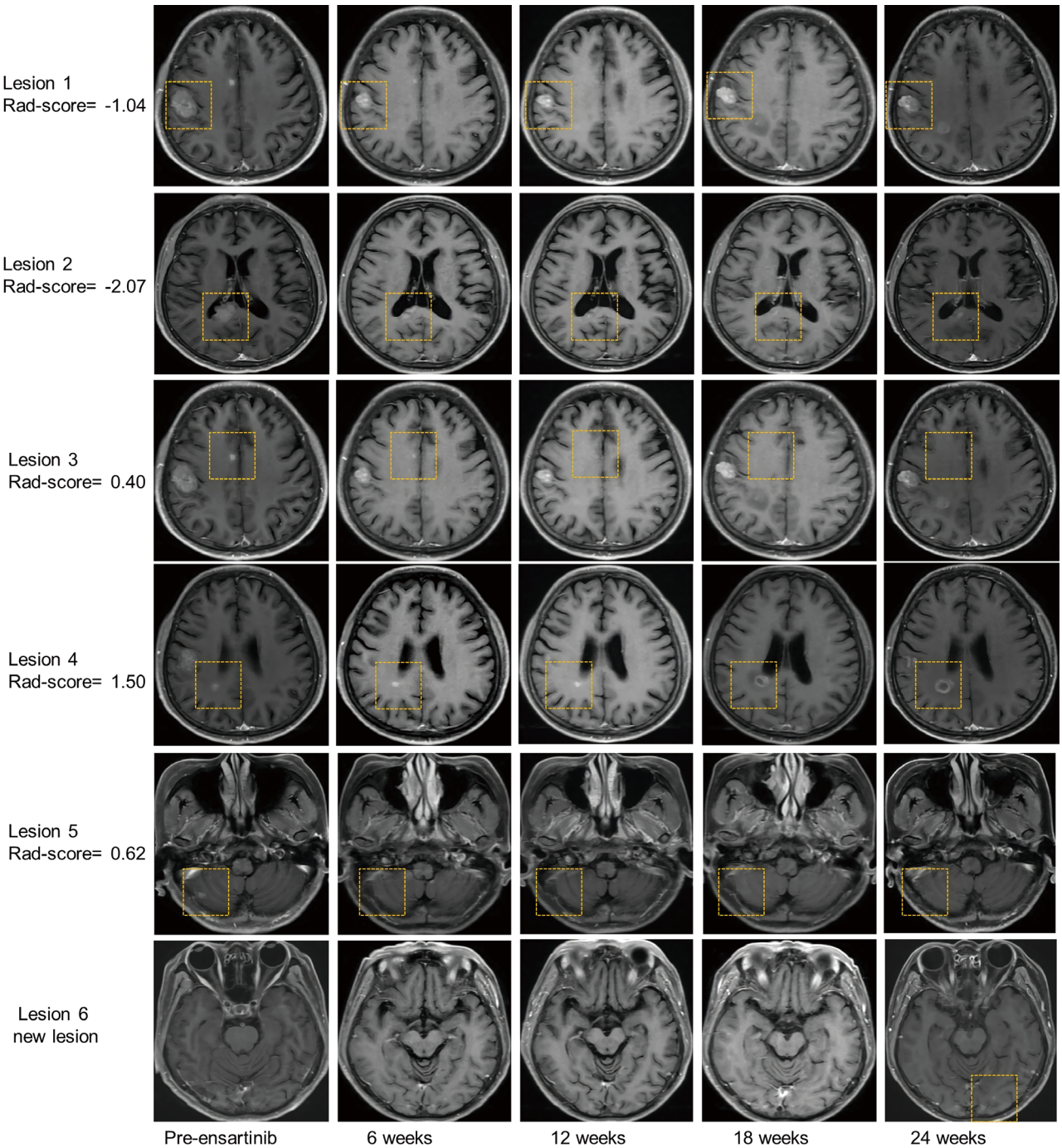

Figure S5 Follow-up images of all enrolled lesions in one patient. Each row shows the follow-up image of a lesion. Lesion 4, with the highest Rad-score, started to progress at 18 weeks and continued to progress at 24 weeks. The remaining lesions with lower Rad-scores had shown no clear progress by 24 weeks. A new brain metastasis (lesion 6) appeared at 24 weeks, and the patient was defined as progressing according to the response evaluation criteria in solid tumors 1.1.

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