**Supplementary Material - Literature Review of MRI Radiomics across different disease sites with varying outcomes.**

S1- Brain Cancer

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| **First Author** | **Cancer site** | **No of centers** | **Sample size** | **Treatment modality** | **Outcomes** | **MRI (Magnetic Field)** | **Image Preprocessing** | **Radiomics features extractor software; no of features** | **Feature selection method** | **Features used** | **Predictive Model** | **Model Evaluation results** |
| Patel et.al 2021 [42] | Glioblastoma | 1 | 76 | Chemoradiotherapy | Early true progression, pseudoprogression, | 1.5T MRI  CE-T1WI, T2WI, DWI | Image Re-sampling, Intensity Normalization | Pyradiomics  307 features | PCC, Recursive feature elimination with a random forest classifier | **Clinical** – Age  **Molecular** – MGMT Methylation  **Radiomics** – CE-T1WI Sphericity, ADC\_first\_order\_Kurtosis, ADC\_GLCM\_Correlation, ADC\_NGTDM\_Contrast, T2WI\_GLDM Dependence Entropy | Naive Bayes Classifier | Overall AUC across fivefold validation = 0.80 (95% CI: 0.74-0.86) |
| Ammari et al. 2021 [68] | Glioblastoma | 1 | 194 | Chemotherapy - Bevacizumab | OS  PFS  **Three classes**  9 months  12 months  15 months | Two MRI scanners  1.5T & 3.0T  Pre-contrast& post-contrast T1WI  T2WI  FLAIR  DWI | Z-score normalization  spatial resampling (voxel size 1x1x1 mm3)  Fixed Bin size of 37 | Olea Sphere  109 features | C-index  Covariance | **Radiomics**  FLAIR\_Original first-order\_10th percentile, Gadolium\_original\_shape\_sphericity, FLAIR\_Area\_to\_volume\_ratio, FLAIR\_NGTDM texture, FLAIR\_NGTDM\_strength  **Clinical**  Deficit, Symptoms, Delay\_R, | Random Forest  Gradient Boosting  Adaboost, Logistic Regression  K-neighbors  Naïve Bayes  SVM | **AUC score on the test**  **OS**  **9 months**  Logistic regression AUC = 0.78  **12 months**  SVM  AUC = 0.85  **15 months**  RFT  AUC = 0.76  **PFS**  Regression model  **6 months** AUC = 0.56  **9 months** AUC = 0.69 |
| Ammari et al. 2021 [69] | Glioblastoma | 2  Public data (2019 BraTS Challenge) and institutional data | BraTS challenge – 210  Validation – 116 | OS  **BraTS**  9 months  12 months  15 months  **Private data**  Median OS of 22 months | Chemotherapy, chemo-radiotherapy | Two MRI Scanner    1.5 T  3.0T  Pre-contrast 3DT1WI, post-contrast 3DT1WI, T2- FLAIR | Pixel-wise normalization  Co-registration ( BraTS : FLAIR + CE-T1WI +mask; Val : CE-T1WI + FLAIR)  Skull-scrapping | Pyradiomics  448 features | Concordance Index | **Submask NCT/NET/ED -** Gadolinium \_Sphericity, Flair\_Minimum, Flair\_strength, Gadolinium\_strength, Flair\_contrast, Flair\_coarseness  **Submask ED-** Gadolinium\_Sphericity,Flair\_major axis length  **Clinical -** Age | KNN, random forest, logistic regression, gradient boosting, AdaBoost, Naïve Bayes, SVM | AUC on Test  **9 months**  RFT AUC = 0.85  **12 months**  RFT  AUC = 0.74  **15 months**  Logistic Regression AUC = 0.58  **22 months Val**  Logistic regression AUC = 0.75 |
| Chang et al. 2019 [51] | Malignant gliomas | 1 | 12 | Overall Survival | Concurrent stereotactic radiosurgery and Bevacizumab | 1.5 T MRI  Pre-treatment T1WI, one-week post1 -treat, two-month post-treat T1W1,  T2-FLAIR | Post 1 and post 2 were registered on the pre-treatment images.  FBN 64 bins | In-house MATLAB 2017a code  61 features  Fpre, Fpost1, Fpost2  Delta features  ΔF1 = (Fpost1-Fpre)/Fpre  ΔF2 = (Fpost2-Fpre)/Fpre | Univariate Cox regression  Out-of-bag permutation random forest  Three-layer back propagation neural network.  L1-regularized logistic regression. | **RF + KSVM Model**  T1\_GLCM\_Correlation, T1\_GLSZM\_Variation\_of\_Intensity,  T1\_ GLSZM\_SmallSizeHigh\_LevelEmphasis, T1\_GLSZM\_HighGrayLevelEmphasis  T1\_GLSZM\_LowGrayLevelSizeEmphasis, T1\_GLCM\_ClusterShade,  T1\_GLRLM\_GrayLevelNonUniformity, T1\_GLRLM\_RunLengthNonUniformity, T1\_GLSZM\_SizeZoneNonUniformity, T1\_GLSZM\_LargeSizeLowGrayLevelEmphasis  **RF +NN Model**  T1\_GLCM\_Correlation, T1\_GLSZM\_Variation\_of\_intensity,  T1\_GLSZM\_SmallSizeHighGrayLevelEmphasis, T1\_GLRLM\_GrayLevelNonIniformity, T1\_GLSZM\_LargeSizeLowGrayLevelEmphasis | RF  L1-regularized Logistic regression  L2-regularized Logistic regression  Linear SVM  Kernel SVM  Three-layer back propagation NN.  Naïve Bayes | Delta features provide better treatment assessment than single time-point features. |
| Jaberipour et al. 2021 [70] | Brain metastasis | 1 | 120 | Hypo-fractionated SRT | Local control/ local failure | 1.5 T MRI  CE-T1WI  T2-FLAIR | Resamples 0.5 x 0.5 x 0.5 mm3.  Skull scrapping | Pyradiomics  800 features | PCC,  mRMR,  Sequential forward feature selection | **Radiomics**  Elongation Tumor  T1- GLDM GLN Edema  T2 GLDM- HGLE- Tumor  T1- GLSZM LAHGLE- Edema  **Clinical**  Previous WBRT, Targeted Systemic Treatment TD, Histology | KNN | **Radiomic Model AUC** = 0.87  **Clinical + Radiomics Model AUC** = 0.65 |
| Du et al. 2023 [63] | Brain metastasis | 2 | N1 = 337  N2= 247  N3= 60  N4 =30 | Stereotactic radiosurgery | Local failure | 1.5T MRI  Axial CE T1WI, T2WI, DWI | Resampling registration  Normalization | Pyradiomics  2153 features | Correlation coefficient, LASSO, mRMR | **Clinical**  Age  Karnofsky Performance Status (KPS)  Graded Prognostic Assessment (GPA) scores.  Number of metastases  **Radiomics – 223 features** | Gaussian Naïve Bates, KNN, RF, adaptive Boosting, SVN with linear kernel Multilayer perceptron | SVM  Clinical-radiomics AUC = 0.93  Radiomics AUC = 0.90 |
| Karami et al. 2019 [71] | Brain Metastasis | 1 | 100 | SRT | Local Control  Local Failure | 1.5 T MRI    GCE T1WI, T2WI | Linear Interpolation resampling 0.5 X 0.5x 0.5 mm3 | MATLAB  3072 features | PCC  Mann-Whitney U test (p-value)  Forward feature selection AUC.632+ | **Overall LC/LF**  Lesion-Margin\_Wavelet\_ILHL\_GLCM\_MaximumProbability\_T2  Edema\_Wavelet\_IHHL\_Histogram\_Maximum\_T2  Tumor\_Histogram\_Minimum\_T2  Tumor-Margin \_Wavelet\_IHLH\_Histogram\_Minimum\_T2  Lesion-Margin \_Wavelet\_IHLL\_Histogram\_Range\_T2  **6-Month LC/LF**  Tumor-Margin \_Wavelet\_ILHL\_GLCM\_MaximumProbability\_T2  Tumor-Margin \_Wavelet\_IHLH\_Histogram\_Minimum\_T1  Edema\_LBP\_Median\_T1  Tumour\_LBP\_Median\_T1  **12-Month LC/LF**  Lesion-Margin\_Wavelet\_IHLL\_GLCM\_MaximumProbability\_T2  Edema\_Wavelet\_IHLH\_Histogram\_Maximum\_T2  Edema\_Wavelet\_IHLH\_Histogram\_MeanAbsoluteDeviation\_T2  Tumor-Margin \_Geometric\_Convexity\_T1 | SVM | ***AUC*.632+**  **(Optimal qMRI**  **Biomarker)**  Overall, LC/LF  AUC = 0.79  6-Month LC/LF  AUC = 0.80  12-Month LC/LF  AUC =  0.81 |
| Suter et al. 2020 [64] | Glioblastoma | 2  Train set – Private  Test set - BraTS | N1 = 63  N2 = 76 | Temozolomide-based chemoradiation | Overall survival | MRI | Resampling to 1mm isovoxels  Skull scrapping  Registration to CE-T1WI  Bias field correction | Pyradiomics  265,604 features | ReliefF  Fisher Score  Gini index  Chi-Square score  joint mutual information  Conditional Infomax feature extraction.  double input symmetric relevance  mutual information maximization  conditional mutual information  Interaction capping  t-test score  mRMR  mutual information feature selection | 564 features  558-deep GLSZM features  Four shape features | KNN, SVC with linear and radial basis function RBF kernels, Gaussian processes, decision trees, random forest, multilayer perceptron, AdaBoost, naïve Bayes, quadratic discriminant analysis QDA, XGBoost, Logistic Regression | AUC drop of 0.56 on the BraTS dataset |
| Cepeda et al. 2023 [65] | Glioblastomas | 5 | 55  Training = 40  Testing =15 | Adjuvant treatment with temozolomide and radiotherapy after surgery | Local Recurrence regions | 1.5 T  3 T  3 T  1.5 T  3 T  MRIs  T1WI, T2WI, FLAIR, T1WI contrast enhance.  ADC maps | z-score normalization  resampling 1x1x1mm3 | Pyradiomics  4730 features |  | 19 first-order statistical features  75 texture features | RF, XGBoost, CatBoost, LightGBM | CatBoost region-based evaluation  AUC 0.81±0.09 |
| Sun et al. 2021 [72] | Glioblastoma | 1 | 77 | Gross total or subtotal resection  CCRT with TMZ, 6 cycles adjuvant TMZ after surgery | True Progression   Pseudo progression | MRI 3T  axial  T1W1 and  T2WI,  FLAIR  CE-T1WI | Normalization | Analysis Kinetics  9675 features | PCC  RF feature importance | 50 features | Conditional inference RF classifier  50 trees | ACC  0.73(95% CI: 0.45, 0.91) |
| Park et al. 2021 [67] | Glioblastoma | 2 | N1 = 86  N2 = 41 | Concurrent chemoradiotherapy/ radiotherapy | Recurrent glioblastoma  Radiation necrosis | 3T MRI  T1W1  T1C  T2WI  ADC | N4 bias correction  Signal normalization  Resamples 1x1x1mm3 | Pyradiomics  263 | F-score  Lasso  MI | **LASSO features**  first-order\_kurtosis  First-order\_mean\_absolute\_deviation.  First-order\_range  GLCM\_inverse\_difference\_normalized.  GLCM\_informal\_measure\_of\_correlation1  GLCM\_informal\_measure\_of\_correlation2  GLRLM\_run\_variance.  GLSZM\_gray\_level non-uniformity  GLSZM\_low gray level zone emphasis  GLSZM\_size zone non-uniformity  GLSZM\_small area high gray level emphasis  NTGDM\_complexity  NTGDM\_strength  Shape\_flatness  Shape\_major axis length  Shape\_maximum 2D diameter (slice)  Shape\_mesh volume  Shape\_sphericity | KNN  SVM  AdaBoost | LASSO feature selection + SVM AUC – 0.80 (0.65-0.95) |
| Li et al. 2023 [73] | High-grade glioma | 1 | 162 | Surgery, postoperative adjuvant temozolomide chemoradiation | 6th, 9th, 12th, 15th, 18th month progression and recurrence | 3T MRI  T1WI, CET1WI, T2WI, FLAIR | Histogram normalization 0-255  Resampling 0.5x 0.5x3mm3 | Pyradiomics  2344 features | Mann-Whitney test  LASSO |  | KNN  RF  SVC, fully connected network FCN | FCN  Radiomics Model AUC = 0.77  Clinical + Radiomics = 0.78 |
| Hettal et al. 2020 [74] | Brain oligometastasis | 1 | 20 | SBRT | Radionecrosis vs Progression | 1.5 or 3T  MRI  CE-T1WI | Discretized no of bins to 8 using BitDepthRescale\_Range  Resampling | IBEX software  1766 features | Fisher score  ReliefF  T-score chi-score  Wilcoxon  Gini index  Mutual information maximization | - | Decision tree  Bayesian, discriminant analysis, nearest neighbor, neural network, partial least square and principle component regression, random forest, SVM, bagging and boosting | Bagging  AUC 0.83(0.65-1) |

**S2 - Nasopharyngeal Carcinoma**

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| **First Author** | **Cancer site** | **No of centers** | **Sample size** | **Treatment modality** | **Outcomes** | **MRI (Magnetic Field)** | **Image Preprocessing** | **Radiomics features extractor software; no of features** | **Feature selection method** | **Features used** | **Predictive Model** | **Model Evaluation results** |
| Li et al 2022[75] | Nasopharyngeal Carcinoma | 1 | 156 | IMRT  NTZ treatment | PFS | 3 T MRI  T1WI, Proton Density, DCE-MR | Ktrans(efflux rate constant), κep (reflux rate constant)  Ve (the extracellular extravascular volume)  Vp (intravascular plasma volume fraction)  Maps were extracted from the DCE-MR images. | AK Software  360 features | Z-score normalization  PCC  Univariate Cox regression (p<0.05)  LASSO Cox regression | **Ktrans features:** Long Run Emphasis\_AllDirection\_offset1\_SD, Long Run Emphasis\_angle0\_offset1, Angular Second Moment, Low Level Gray Level Emphasis\_AllDirection\_offset\_SD, Low Run Low Gray Level Emphasis\_angle0\_offset1, High Intensity Small Area Emphasis,  Small Area Emphasis  **Ve features:** Long Run Emphasis\_AllDirection\_offset1\_SD, Long Run Low Grey Level Emphasis\_AllDirection\_offset1\_SD, Small Area Emphasis, Low Intensity Area Emphasis, Uniformity, High Intensity Small Area Emphasis  **Ktrans + Ve features:** Ktrans\_Long Run Emphasis\_AllDirection\_offset1\_SD, Ktrans\_Cluster Prominence\_angle90\_offset1, Ve\_Long Run Emphasis\_AllDirection\_offset1\_SD, Ktrans\_Long Run Emphasis\_angle0\_offset1, Ktrans\_Angular Second Moment, Ktrans\_Long Run Low Gray Level Emphasis\_angle0\_offset1,  Ve\_Long Run Low Level Gray Level Emphasis\_AllDirection\_offset\_SD, Ve\_Low Intensity Small Area Emphasis, Ve\_Small Area Emphasis, Ve\_uniformity, Ve\_High Intensity Small Area Emphasis, Ktrans\_High Intensity Small Area Emphasis, Ktrans\_small Area Emphasis  **Clinical variables:** Clinical stage, T stage, treatment with nimotuzumab | Radscore and Clinical Variables by Multivariate Cox Regression  Kaplan-Meier Analysis | **Combined Radscore**  **Ktrans + Ve + Clinical** = 0.732 (95% CI 0.599-0.864)  Nomogram cutoff score = 3.1)  High-risk (n= 38 24.36%)  Low risk( n = 118, 75.64%) |
| Du et al. 2019 [43] | Nasopharyngeal Carcinoma | 2 | N1 = 277  N2 = 60 | IMRT  Concurrent or adjuvant chemotherapy | PFS  3-year disease progression | 3T MRI  CE-T1WI T2WI | Resampled spatially 1x1x4mm3 | Pyradiomics  525 features | PCC  ICC  Hierarchical Clustering | **Clinical**: T stage, Overall stage  **Radiomic**: shape sphericity, CE-T1W first order mean absolute deviation.  CE-T1W wavelet LL GLCM sum entropy.  CE-T1 W wavelet LL GLRLM GLNUN | Support vector machine | Radiomic + Clinical  AUC = 0.80 (95% CI: 0.73, 0.89) |
| Zhao et al. 2019 [76] | Locally advanced nasopharyngeal carcinoma | 1 | 123 | Induction Chemotherapy (IC) | IC response and survival  Stable disease Progressive disease  Partial response  Complete response  IC responder (CR/PR)  Non-responder SD/PD | MRI  T1W1,  T2WI  CE-T1WI |  | MATLAB  4503 features | Two-sample t-test  LASSO | Nineteen features were selected. | SVM with linear kernel | Clinical +Radiomics nomogram  C-index = 0.863  IC responder 3-year PFS = 84.81% |

**S3 - Hepatocellular/Liver Cancer**

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| First Author | Cancer site | No of Centers | Sample size | Treatment modality | Outcomes | MRI  (Magnetic Field) | Image Preprocessing | Radiomics feature extractor software; no of features | Feature selection method | Features used | Predictive Model | Model Evaluation results |
| Chen et al. 2023 [44] | Hepatocellular carcinoma | 1 | 144 | Trans arterial Chemoembolization TACE | Complete response  Partial response  Progressive disease  Stable disease | MRI  1.5 T  3.0T  Axial T2-weighted sequence  mDIXON-T1WI | Resampled 1x1x1mm3  Fixed bin width 25 | Pyradiomics  440 features | ICC  Handpicked,  mRMR(KNN, SVM) |  | KNN  SVM LASSO DNN | DNN  AUC = 0.796  Clinical + DNN ACU = 0.735 |
| Liu et al. 2022 [66] | Hepatocellular carcinoma | 2 | 144  N1= 94  N2=46 | Trans arterial Chemoembolization | Tumor response and survival | 1.5T MRI  T1W1,  T2WI, DWI, CE-T1WI  3.0T  T1WI, T2WI, CE-T1WI |  | Pyradiomics  1210 features | mRMR  LASSO | T2\_original\_shape\_Maximum2DDiameterRow  T2\_wavelet.LHL\_firstorder\_Median  T2\_wavelet.LLL\_firstorder\_Kurtosis  ap\_wavelet.HLL\_firstorder\_Skewness  ap\_wavelet.LLH\_glrlm\_ShortRunEmphasis  ap\_original\_glcm\_Imc1  pvp\_original\_shape\_Maximum2DDiameterRow  pvp\_original\_glcm\_Idn  pvp\_original\_shape\_Flatness  dp\_original\_shape\_Flatness  dp\_wavelet.LLH\_glszm\_LargeAreaHighGrayLevelEmphasis  dp\_wavelet.HHL\_glszm\_SmallAreaLowGrayLevelEmphasis  T2\_wavelet.LHL\_firstorder\_Median  T2\_wavelet.HLL\_ngtdm\_Busyness  dp\_original\_glcm\_Imc1 | Univariate and Multivariate Logistic regression | Clinical Model AUC 0.609  Radiomics model AUC 0.754  Combined AUC 0.781 |
| Bodalal et al. 2023 [77] | Colorectal liver metastasis | 1 | 112 | Liver resection | Tumor Hypoxia | 3.0 T MRI  T2WI  DWI  ADC |  | Pyradiomics    4032 features | Chi-square  Correlation without outcome  RF  Linear regression  Logistic regression  Recursive feature selection  Light gradient boost machine | Features selected by at least four out of seven feature selection techniques. | **DWI b200**  Logistic Regression with Decision Tree  **DWI ADC**  Gaussian Naive Bayes with Logistic Regression | **Radiomics signatures**  DWI b200 AUC = 0.79 (95% CI: 0.61-0.93)  DWI ADC AUC = 0.72 (95% CI: 0.50-0.90) |
| Shahveranova et al. 2023 [78] | Colorectal Carcinoma Liver Metastases | 1 | 42 | Microwave ablation | Local Tumor Progression | 1.5 T  T2 fat suppresses (phase 2) and early arterial phase T1 weighted fat suppressed (Phase 1) | z-score normalization | Olea Sphere Software  111 features | Spearman correlation analysis  LASSO | **Phase 1**  Intercept, shape sphericity, shape elongation, shape flatness, first order energy, first order interquartile range, GLSZM large area low gray level emphasis, GLDM gray level variance  **Phase 2**  Intercept, Shape sphericity, shape elongation, shape flatness, first order energy, first order 10th percentile, first order range, first order skewness, first order kurtosis, GLCM cluster shade, GLCM correlation, GLRLM short run emphasis, GLRLM gray level nonuniformity normalized, GLSZM size zone nonuniformity.  GLSZM low gray level zone emphasis, NGTDM coarseness, GLDM gray level variance, GLDM large dependence low-level emphasis | LASSO  Logistic Regression | Clinical Model AUC 0.887 (0.807-0.967)  Clinical +phase1 AUC 0.927(0.860 – 0.993)  Clinical + Phase 2  0.981 (0.948 – 0.999) |

**S4 – Breast Cancer**

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| **First Author** | **Cancer site** | **No of centers** | **Sample size** | **Treatment**  **Modality** | **Outcomes** | **MRI (Magnetic Field)** | **Image Preprocessing** | **Radiomics features extractor software; no of features** | **Feature Selection Method** | **Features used** | **Predictive Model** | **Model Evaluation**  **Results** |
| McAnena et al. 2022 [79] | Breast cancer | 1 | 74 | Neoadjuvant Chemotherapy | Complete pathological response pCR | MRI  1.5T | FBN 32  Resampled 2x2x2 mm3 Lagrangian interpolation | LIFEx  61 features | LASSO | Discretized kurtosis  NGTDM contrast  GLSLM short zone grey level emphasis  GLZLM zone percentage | SVM | **Radomic model** AUC 0.753  **Radiomics + estrogen receptor status** AUC 0.811 |

**S5 – Other cancer sites**

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| **First Author** | **Cancer Site** | **No of Centers** | **Sample Size** | **Treatment**  **Modality** | **Outcomes** | **Mri**  **(Magnetic Field)** | **Image Preprocessing** | **Radiomics Features Extractor Software; No of Features** | **Feature Selection Method** | **Features Used** | **Predictive Model** | **Model Evaluation**  **Results** |
| Wang et al. 2021 [80] | Locally Advanced Rectal Cancer LARC | 1 | 183 | Neoadjuvant Chemotherapy | Good/Poor responders  PFS | Two MRI  3.0 T  T2WI  DWI  CE-T1WI (1 pre, 3 post) | Resampling 1x1x1mm3  Gaussian filtering with sigma values 0.5, 1.0, 1.5 | 3D Slicer  942 features | mRMR  LASSO | T2\_original\_GLSZM\_Large Area Emphasis, T2\_log\_sigma\_0.5mm\_3D\_GLCM\_JointEntropy,  CE\_T1WI\_original\_shape\_SurfaceArea,  CE\_T1WI\_original\_shape\_MajprAxisLength,  CE\_T1WI\_log\_sigma\_1.5mm\_3D\_GLRLM\_LongRunGrayLevelEmphasis,  CE\_T1WI\_log\_sigma\_1.5mm\_3D\_GLCM\_Autocorrelation, CE\_T1WI\_log\_sigma\_1.0mm\_3D\_GLRLM\_ShortRunEmphasis, CE\_T1WI\_log\_sigma\_1.0mm\_3D\_GLDM\_Dependence Variance, CE\_T1WI\_log\_sigma\_5.mm\_3D\_GLSZM\_GrayLevelNonUniformityNormalized,  CE\_T1W1\_log\_sigma\_0.5.mm\_3D\_GLDLM\_SmallDependenceEmphasis  CE\_T1Wl\_log\_sigma\_0.5.mm\_3D\_GLCM\_JointAverage  ADC\_original\_GLRLM\_LowGrayLevelRunEmphasis  ADC\_log\_sigma\_0.5.mm\_3D\_glrlm\_LongRunLowGrayLevelEmphasis | LR  RF  Nomogram | **LR** Radiomics AUC = 0.842(95%CI: 0.741-0.943)  **Nomogram** AUC = 0.898 (95%CI: 0.819 -0.978) |
| Fang et al. 2020 [81] | Locally Advanced Rectal Cancer LARC | 1 | 120 | Concurrent Chemotherapy and radiation therapy CCRT | Treatment response  **Three Classes**  Complete response  Partial response  Progressive disease | 3.0 T MRI  Sagittal T2WI, axial T1WI, axial T2-FS, DWI ADC, | Normalized image intensity | In-house MATLAB 2017a code  1026 features | PCC  LASSO | Sagittal\_T2\_GLRLM\_LongRunHighGrayLevelEmphasis, Axial\_T1\_GLRLM\_RunPercentage, Axial\_F2-FS\_LL\_GLRLM\_ShortRunLowGrayLevelEmphasis, AxialDWIb0\_GLRLM\_LongRunHighGrayLevelEmphasis, AxialDWIb800\_GLRLM\_LongRunEmphasis, AxialDWIb800\_ShortRunLowGrayLevelEmphasis, ADC\_GLCM\_Variance, Sagittal\_T1\_GLRLM\_RunLengthNonuniformity, Axial\_T1\_HH\_GLRLM\_RunPercentage, enhancedMRI\_SurfaceArea, enhancedMRI\_LLH\_Skewness, Coronal\_T1\_GLCM\_dissimilarity, enhancedMRI\_GLCM\_homogeneity | RF  LR  SVM | RF AUC on test set = 0.798 (95% CI: 0.678-0.917) |
| Jajodia et al. 2021 [82] | Uterine Cervical Cancer | 1 | 52 | chemoradiation | Clinical prognostications  Recurrence  Distant metastasis  lymph node metastasis  FIGO stage | 1.5 T  MRI  DWI | ADC maps calculations  PreADC (ADC1)  PostADC (ADC2)  ChangeADC | Pyradiomics  851 features | PCC | **Radiomics**  original\_gldm\_SmallDependenceLowGrayLevelEmphasis  original\_glszm\_LowGrayLevelZoneEmphasis  original\_glszm\_SmallAreaLowGrayLevelEmphasis  wavelet\_HHH\_glcm\_ClusterShade  wavelet\_LLL\_gldm\_DependenceEntropy  wavelet\_LLL\_firstorder\_Uniformity  wavelet\_LLL\_glrlm\_GrayLevelNonUniformityNormalized  wavelet\_HLL\_glszm\_GrayLevelVariance  wavelet\_HLH\_gldm\_SmallDependenceHighGrayLevelEmphasis  wavelet\_HLH\_firstorder\_Median  wavelet\_HLH\_glszm\_GrayLevelVariance  wavelet\_HLH\_glszm\_SmallAreaHighGrayLevelEmphasis  wavelet\_HHH\_glszm\_ZoneEntropy  wavelet\_HHL\_glrlm\_RunEntropy  wavelet\_HHL\_glszm\_GrayLevelVariance  wavelet\_HHL\_glszm\_ZoneEntropy  original\_firstorder\_Energy  original\_firstorder\_TotalEnergy  wavelet\_LHH\_firstorder\_TotalEnergy  wavelet\_HHH\_glszm\_LargeAreaHighGrayLevelEmphasis  wavelet\_HHL\_firstorder\_TotalEnergy  wavelet\_LLL\_firstorder\_Energy  wavelet\_LLL\_firstorder\_TotalEnergy  original\_gldm\_DependenceEntropy | Monotone Multi-layer perceptron neural network  KNN | **Recurrence**  Radiomics +ADC1  AUC = 0.8  Kappa value = 0.55  **Metastasis**  Radiomics + ADC1 + ADC2 + ChangeADC  AUC = 0.84  Kappa = 0.65  **FIGO Stage**  Radiomics + ADC1 + ADC2 + ChangeADC  AUC = 0.71  Kappa = 0.25  **Lymph Node**  Radiomics + ADC1 + ADC2 + ChangeADC  AUC = 0.75  Kappa = 0.6 |
| Speckter et al. 2022 [83] | meningiomas | 1 | 93 | Gamma knife radiotherapy | Response to radiosurgery | 3T MRI  T1WI  CE-T1WI | - | Pyradiomics  337 features | LASSO | **Radiomics**  LoG\_sigma\_1.0mm\_3D\_firstorder,InterquartileRange, logarithm\_NGTDM\_Busyness  **Non-Radiomic**  Karnofsky performance status | Radiomics Score | Combined model AUC = 0.88 |
| Yang et al. 2021 [84] | Vestibular schwannoma | 1 | 336 | Gamma Knife Radiosurgery | Tumor Regression ( Without Pseudoprogression, With Pseudo regression)  Tumor Non-Response | 1.5 T MRI  T1WI, T2WI,  CE-T1WI | Resampling 0.50 x 0.50 x 3.00 mm3  T1WI and T2WI are co-registered on CE-T1WI  Z-score normalization | MR Radiomics Platform  576 features | Two sample t-tests with Bonferroni correction  LASSO | **Tumor regression vs non-response**  T2W- Histogram Standard deviation, T2W-LLL-Texture-GLRLM long run emphasis,  CE-T1WI\_ LLH Texture-LBP-Mean of LBP,  CE-T1WI\_ HLL-Texture LBP\_Uniformity of LBP,  CE-T1WI\_ LLL Histogram Minimum  **Tumor regression with and without pseudoprogression**  CE-T1WI\_Tecture\_GLRLM Long run low gray level emphasis.  CE-T1WI\_Histogram Skewness, T1WI-LLH-Texture-GLCLM Cluster Tendency,  T2WI\_Texture-GLCLM Cluster tendency,  T2WI\_HLL Histogram Range | SVM with radial basis function and Bayesian optimization | CASE 1  AUC = 0.913  CASE 2  AUC = 0.881 |
| Siow et al. 2022 [85] | Locally advanced Hypopharyngeal Cancer | 1 | 198 | Concurrent Chemoradiotherapy | Overall survival and PFS | 3T  MRI  Post-contrast T1 | Low-frequency intensity non-uniformity was removed using the N4 bias correction function.  Normalization of intensity- signal intensity that differs more than 3 std was removed, resampling 1x1x1mm3.  FBN 64 | Pyradiomics 744 features  Wavelet filters LLL, LLH,LHL,LHH, HLL, HLH, HHL and HHH | ICC  PCC  Univariate Cox analysis  LASSO Cox regression | **Overall survival** log.sigma.1.5.mm.3D\_firstorder\_90Percentile  log.sigma.1.mm.3D\_firstorder\_Energy  log.sigma.1.mm.3D\_firstorder\_TotalEnergywavelet-LHL\_glszm\_SizeZoneNonUniformity  **Progression-free survival**  log.sigma.1.5.mm.3D\_firstorder\_90Percentile  log.sigma.1.5.mm.3D\_glcm\_SumEntropy  log.sigma.1.mm.3D\_firstorder\_Energy  log.sigma.2.mm.3D\_glcm\_SumEntropy  log.sigma.2.mm.3D\_ngtdm\_Busyness  original\_glszm\_SmallAreaEmphasis  wavelet-LHH\_glszm\_SizeZoneNonUniformityNormalized  wavelet-LHL\_glszm\_SizeZoneNonUniformity  wavelet-LLL\_glcm\_Imc1  **Clinical:** T4a stage, T4b stage, N2c stage | Multivariate Cox regression model | **Overall survival**    Combined radiomic–clinical model iAUC = 0.671(95%CI: 0.637-0.693)  **PFS**  Combined model iAUC = 0.675 (95% CI: 0.641-0.687) |
| Liu et al. 2022 [86] | Pediatric medulloblastoma | 2 | N1 – 226 (113 training, 113 test set)  N2= 27 | Surgical resection | PFS and OS | 3T MRI  T1w and CE-T1w | Normalized between 0-225 | In-house program  1294 features | PCC  LASSO Cox regression | CE-T1WI\_ori\_shape compactness  CE-T1WI\_ori\_shape\_max\_diameter  CE-T1WI\_ori\_fos\_Energy  CE-T1WI\_ori\_glszm\_LZSE  CE-T1WI\_ori\_glszm\_HGLSE  CE-T1WI\_Coif3\_glszm\_SZHGE  CE-T1WI\_Coif4\_fos\_Root\_mean\_square | Radiomics signature  Multivariate cox regression | Radiomics signature PFS  C-Index on external test set = 0.717 (95% CI: 0.657-0.777)  Radiomic Nomogram +clinicopathological factors C-index on external test set = 0.677( 95% CI: 0.638-0.743) |
| Lin et al. 2023 [45] | Endometrial cancer | 4 | A = 337  BCD = 84  Training = 235  Validation = 102  External testing =84 | - | Recurrence-free survival | 1.5T or 3.0T  CE-TW1 T2W | Resampling 1mm3 via the B-spline curve interpolation  z-score normalization | PyRadiomics  1072 features | ANOVA  LASSO  Wilcoxon rank sum test | **Clinicopathological**  Histopathological type, grade, MILVSI, FIGO stage  **Region IA**  original\_glcm\_Correlation CE -T1W1  original\_glszm\_ZoneEntropy\_ CET1W1  wavelet-HHH\_gldm\_DependenceVariance\_CET1W1, wavelet\_LLL\_firstorder\_energy CET1W1  wavelet-LLH-glszm-largedependence high gray level emphasis CET1W1  original shape Least axis length T2W1  wavelength LLH\_glszm size zone nonuniformity T2W1  **IA with 3 mm PA**  original\_shape\_Flatness CE-T1WI, original\_shape\_LeastAxisLength CE-T1WI, original\_gldm\_LargeDependenceHighGrayLevelEmphasis CE-T1WI, original\_glszm\_ZoneEntropy CE-T1WI, wavelet-LLH\_firstorder\_Skewness CE-T1WI, wavelet-LLL\_firstorder\_Maximum CE-T1WI  **IA with 5 mm PA**  original\_shape\_LeastAxisLength CE-T1WI, original\_glszm\_ZoneEntropy CE-T1WI, wavelet-LHL\_firstorder\_Skewness CE-T1WI, wavelet-HLL\_gldm\_DependenceEntropy CE-T1WI, wavelet-LLL\_firstorder\_Energy CE-T1WI, wavelet-LLL\_firstorder\_Maximum CE-T1WI, wavelet-LLL\_firstorder\_TotalEnergy CE-T1WI, original\_shape\_Maximum2DDiameterRow T2WI | XGBoost  FM - fusion model that combined clinicopathological factors and radiomics features.   IA-intratumoral area  PA, peritumoral area; | FM (IA)  AUC =  0.85 (0.77–0.93)  FM (IA with 3 mm PA)  AUC=0.83 (0.73–0.92)  FM (IA with 5 mm PA)  AUC =0.83 (0.72–0.92) |

**Abbreviations:**

AUC=Area Under receiver operating Curve

ADC = Apparent Diffusion Coefficient

iAUC = Incremental Area Under the Curve

CE-T1WI = Contrast Enhanced T1-weighted image

DCE = Dynamic Contrast Enhanced

DWI = Diffusion Weighted Image

DT = Decision Trees

GLCM = Gray Level Co-occurrence Matrix

GLDM = Gray Level Difference Matrix

GLSZM = Gray Level Zone Matrix

GLSZM = Gray Level Size Zone Matrix

GLZLM = Gray Level Zone Length Matrix

GLRLM = Gray Level Run Length Matrix

HR = Hazard Ratio

NTZ = Nitazoxanide

ICC = Intraclass Correlation Coefficient

IMRT = Intensity Modulated Radiation Therapy

KNN = K Nearest Neighbor

LASSO = Least Absolute Shrinkage and Selection Operator

LC = Local Control

LF = Local Failure

LR = Logistic Regression

MRI = Magnetic Resonance Imaging

mRMR = maximum Relevance Minimum Redundancy

MI = Mutual Information

NB = Naïve Bayes

NGTDM = Neighborhood Gray Tone Difference Matrix

OS = Overall Survival

PCC = Pearson Correlation Coefficient

PFS = Progression-Free Survival

RF = Random Forest

ROC = Receivers Operating Curve

SVM = Support Vector Machine

T1WI = T1-Weighted Image

T2WI = T2-Weighted Image

wavelet-H = High pass filter

wavelet-L = Low pass filter