**Prognostic value of the radiomics-based model in the disease-free survival of pretreatment uveal melanoma：an initial result**

**Materials and methods**

**Image data acquisition**

**Table S1. MR scanning parameters**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Scanner | Sequence | TR(ms) | TE(ms) | FOV (cm) | Number of slices(mm) | Slice thickness(mm) | Slice gap (mm) | NEX | Acquisitiontime (min) | Matrix |
| Philips 3.0T(Ingenia) | T1WI  | 456 | 9 | 16×16 | 16 | 3 | 0.3 | 2 | 2'12 | 268×251 |
| T2WI  | 1936 | 90 | 16×16 | 16 | 3 | 0.3 | 2 | 2'31 | 268×251 |
| Postcontrastaxial T1WI FS | 478 | 8 | 18×20 | 16 | 3 | 0.3 | 1 | 3'15 | 300×250 |
| Postcontrast coronal T1WI FS | 606 | 7.6 | 18×18 | 16 | 3.2 | 0.3 | 2 | 2'13 | 256×240 |
| Postcontrast oblique sagittal T1WI FS | 408 | 6.5 | 16×16 | 16 | 3 | 0.3 | 2 | 2'13 | 228×223 |
|  |  |  |  |  |  |  |  |  |  |  |
| GE 3.0T (Signa HDxt) | T1WI  | 400 | 8 | 16×16 | 12 | 3.5 | 0.3 | 2 | 1'24 | 384×256 |
| T2WI  | 2280 | 120 | 16×16 | 12 | 3.5 | 0.3 | 2 | 1'13 | 384×256 |
| Postcontrastaxial T1WI FS | 520 | 11 | 16×16 | 12 | 3.5 | 0.3 | 3 | 2'0 | 384×224 |
| Postcontrast coronal T1WI FS | 420 | 11 | 22×16.5 | 20 | 4 | 0.3 | 3 | 2'32 | 384×224 |
| Postcontrast oblique sagittal T1WI FS | 380 | 11.5 | 20×20 | 12 | 3 | 0.3 | 2 | 1'12 | 320×256 |
|  |  |  |  |  |  |  |  |  |  |  |
| GE 1.5T (Signa Highspeed) | T1WI | 400 | 15 | 16×16 | 15 | 3 | 0.3 | 2 | 2'01 | 288×256 |
| T2WI  | 3000 | 120 | 16×16 | 15 | 3 | 0.3 | 2 | 2'10 | 288×256 |
| Postcontrastaxial T1WI FS | 500 | 10 | 16×16 | 15 | 3.2 | 0 | 3 | 2'35 | 256×160 |
| Postcontrast coronal T1WI FS | 560 | 10 | 20×20 | 20 | 3.2 | 0 | 3 | 2'45 | 256×160 |
| Postcontrast oblique sagittal T1WI FS | 400 | 11 | 20×20 | 20 | 3.2 | 0 | 2 | 2'30 | 256×160 |

*Abbreviations*: FOV, field of view; TR, repetition time; TE, echo time; NEX number of excitations.

**Feature extraction**

To reduce the effect of slice thickness variation, all images were resampled to the voxel size of 1× 1×1mm 3 using B-Spline interpolation. To minimize the MRI intensity variations, we normalized the intensity of the image using the following formula (where  indicates the original intensity;  indicates the normalized intensity;  refers to the mean value of the image intensity values;  indicates the standard deviation of the image intensity values;  is an optional scaling, by default, it is set to 1). Normalizes the image by centering it at the mean with standard deviation. Normalization is based on all gray values in the image, not just those inside the segmentation.



Then, 4 groups of imaging features were extracted from each normalized pretreatment MRI scan with manually segmented ROIs: Group 1 (first order) consisted of 19 descriptors that quantitatively delineate the distribution of voxel intensities within the MR image through the use of basic metrics. Group 2 (shape features) consisted of 15 three-dimensional features that reflected the shape and size of the VOIs. Group 3 (texture features) included 59 textural features calculated from grey level run-length and grey level co-occurrence texture matrices, which can be used to quantify differences in regional heterogeneity. Group 4 (higher-order statistical features) included the intensity and texture features derived from wavelet transformation of the original image (936 features). Five types of filters were used: exponential, square, square root, logarithm, and wavelet. Wavelet decomposition was performed by applying low- (L) and high-pass (H) directional filters, resulting in three-dimensional images. Previous radiomics studies have demonstrated the utility of this approach 1,2.

**Table S2. The p-values of univariate analyses of clinical variables.**

|  |  |
| --- | --- |
| **Variables** | **p** |
| **Age** | ＜0.001 |
| **Gender**  | 0.244 |
| **Location**  | 0.989 |
| **Shape**  | 0.567 |
| **Marge**  | 0.312 |
| **Signal intensity**  |  |
| **T1WI**  | 0.612 |
| **T2WI**  | 0.906 |
| **Height** | 0.033 |
| **Basal diameter** | 0.027 |
| **T stage** | 0.303 |
| **Degree of enhancement**  | 0.313 |
| **Homogeneity of enhancement**  | 0.069 |
| **Retinal detachment**  | 0.011 |

**References**

1. Zhang B, Tian J, Dong D, et al. Radiomics Features of Multiparametric MRI as Novel Prognostic Factors in Advanced Nasopharyngeal Carcinoma. Clin Cancer Res 2017;23:4259-4269.

2. Parmar C, Grossmann P, Rietveld D, et al. Radiomic Machine-Learning Classifiers for Prognostic Biomarkers of Head and Neck Cancer. Front Oncol 2015;5:272.