**Supplementary information**

**I、Radiomics feature extraction methodology:**

The radiomics features of the three ROIs are extracted by utilizing the open-source radiomics feature extraction package (https://github.com/mvallieres/radiomics/). There are three categories of features including shape, histogram and texture features. We extract 4 non-textural features and 43 textural features from each ROI. The non-textural features included volume, size, solidity and eccentricity. The textural features consist of two parts: (1) first-order statistics texture features (histogram feature) where three features are extracted from the grayscale histogram of the ROIs. (2) higher-order texture features. The number of the features that are extracted from the gray level cooccurrence matrix (GLCM), the gray level run length matrix (GLRLM), the gray level size zone matrix (GLSZM), and the neighborhood gray tone difference matrix (NGTDM) are nine, thirteen, thirteen and five, respectively.

There are four parameters named R, Scale, Algo and Ng during texture features extraction. Specifically, R specifies the ratio of weight to band-pass coefficients over the weight of the rest of the coefficients when performing wavelet band-pass filtering, where a candidate set of [1/2, 2/3, 1, 3/2, 2] is chosen. Scale is a parameter for the isotropically resample of the volume and its candidates are ['pixelW', 1, 2, 3, 4,5]. The parameter Algo specifies the quantization algorithm which can be either equal-probability quantization or Lloyd-Max quantization. Ng is the number of gray levels in the quantization process with candidates of [8,16,32,64].

**Table S1.** Radiomics texture features of each ROI.

|  |  |  |  |
| --- | --- | --- | --- |
| **Texture Features** | **Feature Names** | **Texture Features** | **Feature Names** |
| GLRLM | Short Run Emphasis (SRE) | GLSZM | Small Zone Emphasis (SZE) |
| Long Run Emphasis (LRE) | Large Zone Emphasis (LZE) |
| Gray-Level Nonuniformity (GLN) | Gray-Level Nonuniformity (GLN) |
| Run-Length Nonuniformity (RLN) | Zone-Size Nonuniformity (ZSN) |
| Run Percentage (RP) | Zone Percentage (ZP) |
| Low Gray-Level Run Emphasis (LGRE) | Low Gray-Level Zone Emphasis (LGZE) |
| High Gray-Level Run Emphasis (HGRE) | High Gray-Level Zone Emphasis (HGZE) |
| Short Run High Gray-Level Emphasis (SRHGE) | Small Zone Low Gray-Level Emphasis (SZLGE) |
| Short Run Low Gray-Level Emphasis (SRLGE) | Large Zone Low Gray-Level Emphasis (LZLGE) |
| Long Run Low Gray-Level Emphasis (LRLGE) | Large Zone High Gray-Level Emphasis (LZHGE) |
| Long Run High Gray-Level Emphasis (LRHGE) | Gray-Level Variance (GLV) |
| Gray-Level Variance (GLV) | Zone-Size Variance (ZSV) |
| Run-Length Variance (RLV) | Small Zone High Gray-Level Emphasis (SZHGE) |
| GLCM | Energy | NGTDM | Coarseness |
| Contrast | Contrast |
| Entropy | Busyness |
| Homogeneity | Complexity |
| Correlation | Strength |
| Sum Average | Global | Variance |
| Variance | Skewness |
| Dissimilarity | Kurtosis |
| AutoCorrelation |

**II、Radiomics score calculation formula:**

R(x)= -7.928015

-1.936812\*GLSZM.SZE\_R1S4A2N3

+1.196779e+02\*GLSZM.GLN\_R2S3A1N4

-8.481308\*GLSZM.ZSN\_R2S3A2N3

-3.174457\*GLSZM.ZP\_R1S1A2N2

+6.284963e-01\*GLSZM.ZP\_R1S4A2N2

+6.935012e-01\*GLSZM.SZLGE\_R1S1A2N2

-4.699073e-02\*GLSZM.SZHGE\_R1S4A1N4

-6.394282e-03\*GLSZM.SZHGE\_R2S3A2N3-

5.206677e-03\*GLSZM.SZHGE\_R3S3A2N1

+1.733827e-02\*GLCM.Dissimilarity\_R5S1A2N1

+4.928819e+01\*GLRLM.GLN\_R1S1A1N2

-2.224503e-01\*GLRLM.GLV\_R2S1A2N1

+2.238739e-05\*NGTDM.Complexity\_R5S2A1N4

-2.405819e-02\*NGTDM.Strength\_R4S3A1N3

-1.119894\*GLSZM.ZSN\_R4S4A2N4(spleen)

+4.684476e-09\*GLSZM.LZHGE\_R1S2A1N3(spleen)

+1.689389e-01\*GLRLM.LRE\_R1S2A1N1(spleen)

-1.148589e-01\*GLRLM.SRHGE\_R1S1A2N1(spleen)-5.318809\*GLRLM.GLV\_R2S3A1N4(spleen)

**III、Supplementary Figure S1**

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(A) The ROC curve of rad-score for predicting VNT in cirrhotic patients. (B) Turkey box-plot of rad-score in non-VNT and VNT groups. Abbreviations:ROC, receiver operator characteristic; AUC, area under the curve.