

Supplementary Materials

¹⁸F-FMISO-PET Hypoxia Monitoring for Head-and-Neck Cancer Patients: Radiomics Analyses Predict the Outcome of Chemo-Radiotherapy

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Table S1. Radiomics Features.

SUV-Histogram	Maximum SUV (SUV _{max}), Peak SUV (SUV _{peak}), Minimum SUV (SUV _{min}), Mean SUV (SUV _{mean}), Volume (V), Total Lesion ¹⁸ F-FMISO (TLF), Area under the curve of the cumulative SUV-volume histogram (AUC _{CSH}), Skewedness (S), Coefficient of variance (CoV), Kurtosis (K), Integral Uniformity (IU), Differential Uniformity (DU), Energy (E _H) and Entropy (Ent _H)
GLCM	Local Homogeneity (LH), Correlation (C _{CM}), Contrast (Con _{CM}), Energy (E _{CM}), Entropy (Ent _{CM}), Variance (Var _{CM}), Autocorrelation (Acor) and Dissimilarity (D)
GLRLM	Short Run Emphasis (SRE), Long Run Emphasis (LRE), Low Gray-Level Run Emphasis (LGRE), High Gray-Level Run Emphasis (HGRE), Short Run Low Gray-Level Emphasis (SRLGE), Short Run High Gray-Level Emphasis (SRHGE), Long Run Low Gray-Level Emphasis (LRLGE), Long Run High Gray-Level Emphasis (LRHGE), Gray-Level Non-uniformity (GLN), Run Percentage (RP), Length Non-uniformity (RLN)
GLSZM	Small Zone Emphasis (SZE), Large Zone Emphasis (LZE), Low Gray-Level Zone Emphasis (LGZE), High Gray-Level Zone Emphasis (HGZE), Small Zone Low Gray-Level Emphasis (SZLGE), Small Zone High Gray-Level Emphasis (SZHGE), Large Zone Low Gray-Level Emphasis (LZLGE), Large Zone High Gray-Level Emphasis (LZHGE), Zone-Size Non-uniformity (ZSN), Zone Percentage (ZP), Gray-Level Variance (GLV) and Zone-Size Variance (ZSV)
NGTDM	Coarseness (Coar), Contrast (Con _{NM}), Complexity (Comp) and Texture Strength (TS)

Abbreviations: SUV: standardized uptake values, GLCM: gray-level co-occurrence matrix, GLRLM: gray-level run length matrix, GLSZM: gray-level size zone matrix, NGTDM: neighborhood gray tone difference matrix.

Table S2. Radiomics features with prognostic value at W2 in the initial cohort.

OS	DICE, Energy, C _{CM} , LZE, LZLGE, WFGLV
PFS	DICE, C _{CM} , LZLGE, WF-C _{CM} , WF-GLV, WF-GLV2, WF-Busyness, Q-SZLGE, Q-LGRE, QSRLGE
LR	LGZE, DU, SZLGE, SRLGE, LGRE, LRLGE, WF-SZLGE, WF-GLV2, Q-SZLGE, LZLGE, WF-LZHGE, WF-LGRE, WF-SRLGE, WF-LGZE, WF-LRLGE, Q-LGZE, C _{CM} , GLV2
DM	DICE, Q-C _{CM}

Abbreviations: OS: overall survival, PFS: progression free survival, LR: local recurrence and DM: distant metastasis.

Outcome					W2		W5		W2 vs W5
Patient	Locoregional recurrence	Distant metastasis free survival	Free Survival (months)	Overall Survival (months)	ΔV	CP (DICE for estable, Sens for increasing and PPV for decreasing hypoxia)	ΔV	CP (DICE for estable, Sens for increasing and PPV for decreasing hypoxia)	
P01			60	60	-1		236		
P02			59	59	281		319		
P03			61	61	-68		109		
P04	1		8	58	22		-100		
P05	1		11	55	16		-100		
P06	1	1	7	34	-92		-100		
P07			5	9	-100		-98		
P08			49	49	-82		-84		
P09		1	44	44	-93		-100		
P10	1	1	10	24	-70		-98		
P11	1		10	16	136		-74		
P12	1		8	12	-96		-100		
P13			41	41	-93		-100		
P14	1	1	7	30	0		0		
P15		1	3	16	-95		324		
P16	1		8	31	-99		-100		
P17	1		17	30	-78		-89		
P18			27	27	96		-40		
P19	1		14	28	-43		-86		
P20	1	1	10	18	-16		-100		
P21	1		8	17	-12		-68		
P22			23	24	-48		-58		
P23			18	19	41		-18		
P24			19	19	-90		-100		
P25			14	15	-97		-34		

Status based on ΔV				
Increasing (IH):	$\Delta V \geq 15\%$			
Stable (SH):	$15\% > \Delta V > -15\%$			
Decreasing (DH):	$-15\% \geq \Delta V$			

Status based on CP	
Static, geographically Stable (gS):	CP ≥ 0.6
Dynamic, geographically unstable (gD):	$0.60 > CP$
Without hypoxic region	

Different Status
Same status

Figure S1. Hypoxia variation status and treatment outcome for each patient and in each week.