

Supplementary Table S1. Interobserver agreement for semantic CT features

Cohen's kappa coefficients were calculated from the initial independent readings of two thoracic radiologists before consensus adjudication. Percentile bootstrap 95% confidence intervals were obtained from 10,000 resamples.

Feature	Reader 1 positive, n	Reader 2 positive, n	Initial discordant cases, n (%)	Overall agreement, %	Cohen's kappa (95% CI)	Interpretation
Lobulation	61	59	4 (3.8)	96.2	0.921 (0.838-0.981)	Almost perfect
Vacuole sign	46	45	1 (1.0)	99.0	0.980 (0.939-1.000)	Almost perfect
Spiculation	103	104	1 (1.0)	99.0	0.000 (0.000-0.000)	Uninformative
Vascular convergence	98	95	3 (2.9)	97.1	0.785 (0.477-1.000)	Substantial
Pleural indentation	90	90	0 (0.0)	100.0	1.000 (1.000-1.000)	Almost perfect
Air bronchogram	50	51	1 (1.0)	99.0	0.981 (0.940-1.000)	Almost perfect
Peripheral ill-defined opacity	64	64	4 (3.8)	96.2	0.919 (0.834-0.981)	Almost perfect
Satellite lesions	3	3	0 (0.0)	100.0	1.000 (1.000-1.000)	Almost perfect

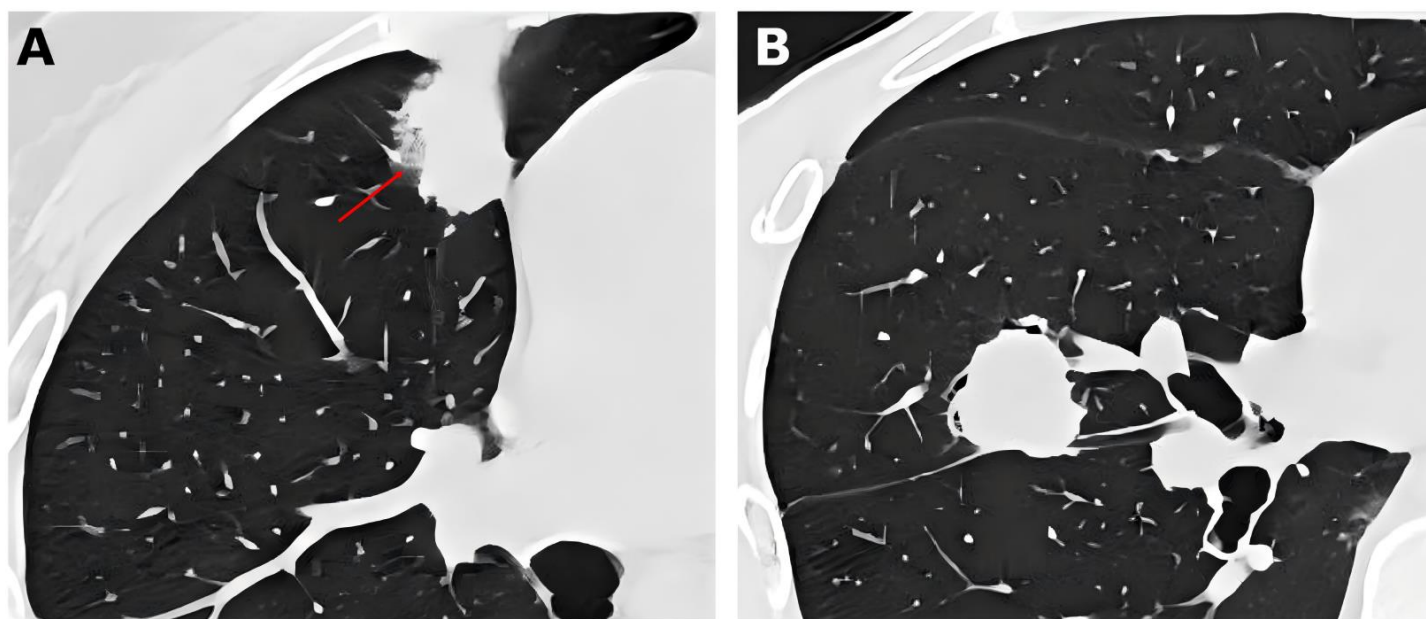
Note: Spiculation yielded a kappa value of 0 because one reader scored all 104 lesions as positive and the other scored 103 of 104 as positive. Under this extreme prevalence imbalance, kappa is uninformative despite 99.0% raw agreement. Abbreviations: CI, confidence interval; CT, computed tomography.

Supplementary Table S2. Hematocrit-to-CT interval and sensitivity analysis of CT-ECV remeasurement reproducibility

The interval represents the absolute number of days between collection of the hematocrit value used in the CT-ECV formula and CT acquisition. Absolute repeat-measurement difference was defined as |first CT-ECV - second CT-ECV|.

Measure	Result
Hematocrit-to-CT interval, median (Q1, Q3), days	0 (0, 1)
Hematocrit-to-CT interval, range, days	0-3
Same day, n (%)	57 (54.8)
1 day, n (%)	42 (40.4)
2 days, n (%)	4 (3.8)
3 days, n (%)	1 (1.0)
Within 1 day, n (%)	99 (95.2)
Spearman's rank correlation coefficient (r_s): interval vs. absolute CT-ECV difference	$r_s = 0.069$; $P = 0.486$
Absolute CT-ECV difference with same-day hematocrit, median (Q1, Q3), %	2.21 (0.98, 3.84)
Absolute CT-ECV difference with interval ≥ 1 day, median (Q1, Q3), %	2.45 (1.01, 4.06)
Same-day vs. interval ≥ 1 day, Mann-Whitney U test	$P = 0.592$

Note: Because the same hematocrit value was used for both repeat CT-ECV calculations, this sensitivity analysis evaluates whether sampling interval was related to repeat-measurement disagreement; it does not exclude absolute CT-ECV bias caused by physiological hematocrit change between blood sampling and CT. Abbreviations: CT, computed tomography; CT-ECV, computed tomography-derived extracellular volume fraction; Q1, first quartile; Q3, third quartile; r_s , Spearman's rank correlation coefficient.



Supplementary Figure S1. Representative CT examples illustrating peripheral ill-defined opacity. A, Peripheral ill-defined opacity is present along the lateral margin of a right upper lobe tumor, appearing as a non-solid hazy attenuation immediately outside and contiguous with the tumor border (red arrow). B, Peripheral ill-defined opacity is absent around a right middle lobe tumor, with a sharp tumor-lung interface. (Abbreviation: CT, computed tomography.)