

**Table S1** Intergroup comparison of the clinical basic information among the CTEPH, CTED, and control groups

Characteristics	CTEPH vs. CTED <sup>a</sup>	CTEPH vs. control <sup>a</sup>	CTED vs. control <sup>a</sup>
Analysis of variance multiple comparison <i>post-hoc</i> analysis			
Age (years)	0.40	0.65	0.34
BMI (kg/m <sup>2</sup> )	0.21	0.33	0.91
Non-parametric multiple-group comparisons (Kruskal-Wallis test)			
NT-proBNP (pg/mL)	<0.01	<0.01	0.57
6MWD (m)	<0.01	<0.01	0.44
mPAP (mmHg)	<0.01	<0.01	0.52
PAWP (mmHg)	–	–	–
PVR (WU)	<0.01	<0.01	0.55
SV (mL)	<0.01	<0.01	0.76
CO (L/min)	<0.01	<0.01	0.88
CI (L/min/m <sup>2</sup> )	<0.01	<0.01	0.46
RVSVI (mmHg*mL/m <sup>2</sup> )	<0.01	<0.01	0.46
Chi-squared test or Fisher's exact test			
Gender (male/female)	–	–	–
NYHA FC III/IV	<0.01	<0.01	<0.01

<sup>a</sup>, P value represents two-sided significance from a one-way analysis of variance or Shapiro-Wilks test.

**Table S2** Intergroup comparison of the CTPA-derived tortuosity and fractal dimension in the CTEPH, CTED, and control groups

Measurement	CTEPH vs. CTED <sup>a</sup>	CTEPH vs. control <sup>a</sup>	CTED vs. control <sup>a</sup>
Analysis of variance multiple comparison <i>post-hoc</i> analysis			
Arterial vessel FD	0.40	0.65	0.34
Venous vessel FD	0.21	0.33	0.91
Airway FD	0.46	0.72	0.89
Artery to vein FD ratio	0.69	0.25	0.42
Artery vs. airway FD differences <sup>b</sup>	0.28	0.93	0.55
Non-parametric multiple-group comparisons (Kruskal-Wallis test)			
Arterial vessel tortuosity	<0.01	<0.01	0.008
Venous vessel tortuosity	–	–	–
Airway tortuosity	–	–	–
Artery to vein tortuosity ratio	<0.01	<0.01	0.05
Bronchovascular bundle tortuosity difference <sup>b</sup>	0.001	<0.01	0.03

<sup>a</sup>, P value represents two-sided significance from a one-way analysis of variance or Shapiro-Wilks test; <sup>b</sup>, the numerical value obtained by subtracting the bronchial morphological parameters from the pulmonary arterial morphological parameters.

**Table S3** Intergroup comparison of the CTPA-derived pulmonary vessel volumes in CTEPH, CTED, and control groups

Measurement	CTEPH vs. CTED <sup>a</sup>	CTEPH vs. control <sup>a</sup>	CTED vs. control <sup>a</sup>
Analysis of variance multiple comparison post-hoc analysis			
TBV <sub>ART</sub> (mL)	<0.01	0.47	0.11
Arterial BV5/TBV <sub>ART</sub> (%)	0.01	0.01	0.60
Arterial BV10/TBV <sub>ART</sub> (%)	<0.01	<0.01	0.54
Arterial BV10+/TBV <sub>ART</sub> (%)	<0.01	<0.01	0.56
Venous BV5/TBV <sub>VEIN</sub> (%)	0.18	0.87	0.49
Venous BV10/TBV <sub>VEIN</sub> (%)	0.08	0.08	0.39
Venous BV10+/TBV <sub>VEIN</sub> (%)	0.07	0.76	0.40
Non-parametric multiple-group comparisons (Kruskal-Wallis test)			
Lung volume (L)	<0.01	0.11	0.56
MPAd	<0.01	<0.01	0.61
MPAd/AAd ratio	<0.01	<0.01	0.57
RV/LV ratio	<0.01	<0.01	0.51
Total vessel volume (mL)	–	–	–
TBV <sub>VEIN</sub> (mL)	0.04	0.60	0.04
Arterial branch number	0.86	<0.01	<0.01
Arterial ρBV5 (mL/L)	0.02	0.03	0.59
Arterial ρBV10 (mL/L)	0.02	0.16	0.89
Arterial ρBV10+ (mL/L)	<0.01	0.03	0.74
Venous branch number	–	–	–
Venous ρBV5 (mL/L)	–	–	–
Venous ρBV10 (mL/L)	–	–	–
Venous ρBV10+ (mL/L)	0.03	0.13	0.97
BV5 AV ratio	0.09	0.02	0.30
BV10 AV ratio	–	–	–
BV10+ AV ratio	<0.01	<0.01	0.33
Airway branch number	–	–	–
Total airway volume (mL)	–	–	–
Total airway length (cm)	–	–	–

<sup>a</sup>, P value represents two-sided significance from a one-way analysis of variance or Shapiro-Wilks test.

**Table S4** Comparison of the CTPA-derived volume metrics among the CTEPH, CTED, and control groups

Volume metrics	Control group (N=20)	CTED group (N=54)	CTEPH group (N=116)	P value <sup>a</sup>
Pulmonary arteriovenous ratio				
BV5 ratio	1.07 (0.97–1.35)	1.06 (0.95–1.21)	0.98 (0.87–1.17)	0.03
BV10 ratio	1.04 (0.91–1.17)	1.00 (0.90–1.08)	1.01 (0.91–1.14)	0.43
BV10+ ratio	0.93 (0.85–1.04)	0.85 (0.74–0.99)	1.23 (1.01–1.55)	<0.01
Airway				
Branch number	111.5 (83.0–131.8)	86.5 (64.8–117.3)	83.0 (64.5–109.5)	0.06
Total volume (mL)	24.1 (19.5–31.1)	19.0 (14.0–26.0)	19.5 (15.0–25.3)	0.12
Total length (cm)	176.6 (133.0–206.7)	128.7 (95.0–181.3)	131.0 (97.3–179.4)	0.10

Data are presented as the median and interquartile range for the continuous variables. <sup>a</sup>, P value represents two-sided significance from a one-way analysis of variance or Shapiro-Wilks test.