

Lung microvasculopathy in chronic thromboembolic pulmonary hypertension: high-resolution findings with photon-counting detector CT in 29 patients

ELECTRONIC SUPPLEMENTARY MATERIAL

Table A: Scanning parameters

Acquisition parameters	UHR non-contrast n=9	UHR Spectral CTA n=11	Standard Spectral CTA n=9
X-ray source	Single-source	Single-source	Single-source Dual-source
Kilovoltage	Sn100 / Sn 140 depending on patient morphotype	140	120 / 140
Collimation	120 x 0.2 mm	120 x 0.2 mm	144 x 0.4 mm
Pitch	1	1	1.5/ 2-3
Rotation time, s	0.25	0.25	0.25
IQ level	36 (ref mAs : 66)	80 (ref mAs : 57)	80 (ref mAs : 57)
CAREDose 4D	on	on	on
Caudo-cranial acquisitions	+	+	+
End-inspiratory acquisition	+	+	+
Injection parameters			
Iodine concentration, mg I/mL		400	400
Flow rate, mL/s		4	4
Volume administered, mL		80 (iodine) + 40 (diluted contrast medium)	80 (iodine) + 40 (diluted contrast medium)
ROI position		ascending aorta	ascending aorta
Threshold, HU		150 (on serial acquisitions at 90 kVp)	150 (on serial acquisitions at 90 kVp)
Reconstruction parameters for lung images			
-thickness, mm	0.2	0.2	0.4

-intervals, <i>mm</i>	0.2	0.2	0.4
-kernel	BI60	BI60	BI60
-level of iterative reconstruction	QIR 4	QIR 3	QIR 3
<u>Energy level for monoenergetic reconstruction</u>	T3D	T3D	70 keV

Abbreviations: UHR: ultra-high-resolution; CTA: computed tomographic angiography; IQ; 4D: four dimensional; HU: Hounsfield Unit; keV: kilo-electron-volt; QIR: quantum iterative reconstruction

Supplementary Material -

Table B

From pathophysiology descriptions to CT features of microvasculopathy in CTEPH

	Pathophysiological findings	Observed pathological lesions		Extrapolated CT features
Areas of nonobstructed pulmonary arteries (hyperattenuating areas on CT)	-redistribution of blood flow -PA exposed to high pressure and shear stress	PAH-like lesions including intimal thickening and remodelling of pulmonary resistance vessels, eccentric intimal fibrosis, intimal fibromuscular proliferation and plexiform lesions.	→	-dilated arterioles -subpleural tortuosity (25,28,29,31) -ill-defined micronodules (22-25) ;
Areas of obstructed pulmonary arteries (hypoattenuating areas on CT)	<i>Distally to pulmonary arteries occluded by fibrotic material:</i> (a) recanalization by bronchial arteries	(a) recanalization via vasa vasorum	↕	-PA recanalized: <i>dilated and irregular pulmonary arterioles (described as vascular tree-in-bud)</i> -PA not recanalized: <i>arterioles of small diameter</i>
	(b) anastomoses between bronchial arteries and the pulmonary circulation	(b) anastomosis at the: -precapillary level, responsible for PAH-like lesions; -capillary & and venular levels: PVOD/PCH lesions	→ →	PAH-like lesions (<i>cf above</i>) lobular GGO & septal lines (26,27)
	(c) creation of subpleural systemic-pulmonary anastomoses.		→	Signs suggestive of systemic-to-pulmonary anastomoses in the subpleural region.