

Chronic thromboembolic pulmonary hypertension (CTEPH) after acute pulmonary embolism (PE)

Incidence: around 3%¹

Checklist of 20 items that should raise the awareness for CTEPH:

At the time of the acute PE		
1. Massive or recurrent PE (OR 3-4) ^{2,3,4,5}	Diagnosis	<input type="checkbox"/>
2. Unprovoked PE (OR 4) ⁶	CTEPH score	<input type="checkbox"/>
3. Hypothyroidism ^{3,6}		<input type="checkbox"/>
4. Symptom onset >2 w before PE diagnosis ⁶		<input type="checkbox"/>
5. RV dysfunction on CT or echo (RV/LV diameter >1) ^{5,6}		<input type="checkbox"/>
6. No diabetes mellitus ⁶		<input type="checkbox"/>
7. No thrombolytic therapy or embolectomy ⁶		<input type="checkbox"/>
8. Systolic PAP >60 mmHg ⁵		Echocardio
9. Organized mural thrombi ⁵	CT scan	<input type="checkbox"/>
10. Arterial webs or bands ⁵		<input type="checkbox"/>
11. Dilated bronchial arteries ⁵		<input type="checkbox"/>
12. Mosaic parenchymal perfusion pattern ⁵		<input type="checkbox"/>

At follow up (3-6 months)		
13. New or worsened dyspnea ^{2,7,8}	Symptoms	<input type="checkbox"/>
14. Splenectomy ³	Risk factors	<input type="checkbox"/>
15. VA shunt for hydrocephaly ³		<input type="checkbox"/>
16. Chronic inflammatory disorders ³		<input type="checkbox"/>
17. Antiphospholipid antibodies ³		<input type="checkbox"/>
18. Non-O blood group ^{2,9}		<input type="checkbox"/>
19. RV hypertrophy (ECG) ¹⁰	CTEPH rule out	<input type="checkbox"/>
20. Increased NT-proBNP ¹⁰		<input type="checkbox"/>

ECG criteria for RV hypertrophy¹⁰

- QRS axis >90°, and/or
- rSR' or RSr' pattern in lead V1, and/or
- R:S>1 in lead V1 with R>0.5 mV

- (1) Ende-Verhaar Y et al. *Eur Respir J* 2017;49:1601792
- (2) Pepke-Zaba J et al. *Circulation* 2011;124:1973–81
- (3) Bonderman D et al. *Eur Respir J* 2009;33:325–31
- (4) Lang I et al. *Thromb Haemost* 2013;110:83–91
- (5) Guérin L et al. *Thromb Haemost* 2014;112:598–605
- (6) Klok FA et al. *J Thromb Haemost* 2015;135:796–801
- (7) Konstantinides S et al. *Eur Heart J* 2014;35:3033–69
- (8) Galie N et al. *Eur Heart J* 2016;37:67–119
- (9) Bonderman D et al. *Thromb Haemost* 2003;90:372–6
- (10) Klok FA et al. *Thromb Res* 2011;128:21–6