

Diagnosis of Pulmonary Embolism in patients with Hemoptysis: the POPEIHE study

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On behalf of the SIMEU Study Center



Background

Although hemoptysis is a well known symptom of presentation of pulmonary embolism (PE), and it is included in different diagnostic scores for PE

- the **prevalence** and **characteristics of pulmonary embolism** (PE) in patients with hemoptysis
- **efficiency** and **failure rates** of different clinical diagnostic algorithms for PE in this patient population

has not been specifically investigated

Materials and Methods

**consecutive adult
patients presenting
with
hemoptysis**

**9 Italian Emergency
Departments (ED)**

**prospective,
multicenter,
observational
study**

Materials and Methods

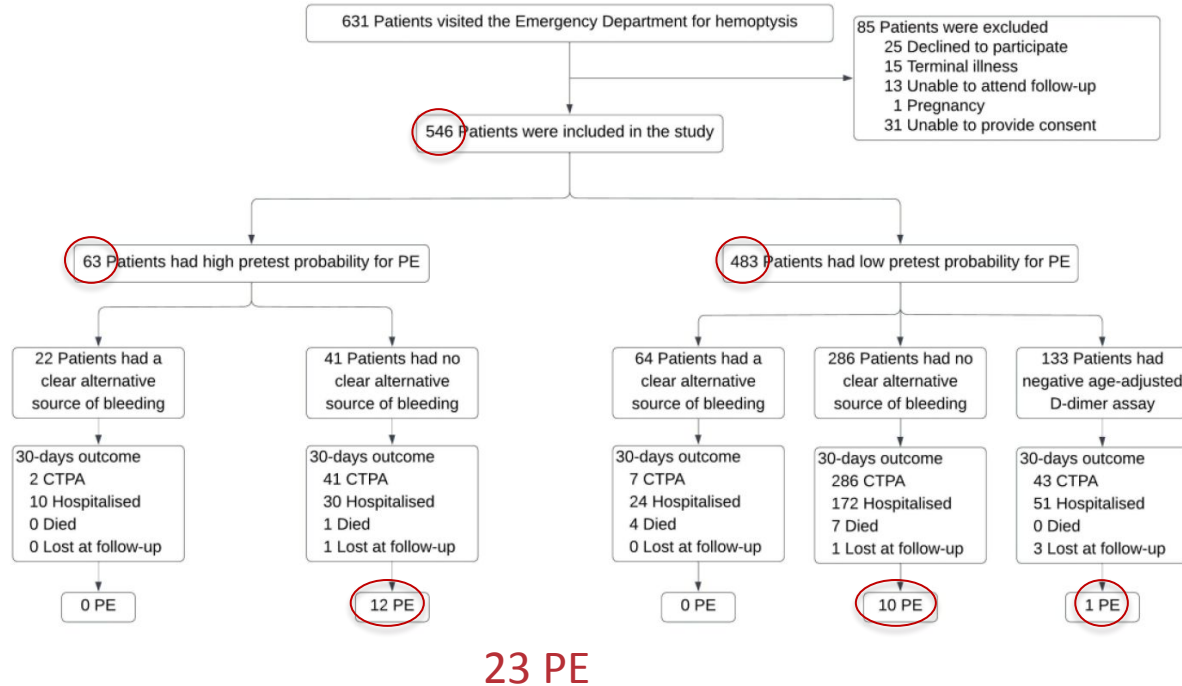
PE diagnosis was ruled out in patients with

- a low pretest probability
- a negative age-adjusted D-dimer (referred to as the 'age-adjusted' D-dimer strategy)
 - a negative CTPA
- when a clear alternative source of bleeding was identified, along with negative findings in a 30-day follow-up for venous thromboembolism.

PEGeD score		modified YEARS score	
Wells clinical pretest probability		YEARS criteria	
low	D-dimer < 1000 ng/mL	• Clinical signs of DVT • PE most likely diagnosis (Physician's judgment)	
intermediate	D-dimer < 500 ng/mL	No criteria fulfilled	D-dimer < 1000 ng/mL
high	CTPA	>= 1 criteria fulfilled	D-dimer < 500 ng/mL

Revised Geneva Score		Wells Score	
Variable	Points	Variable	Points
Predisposing factors		Predisposing factors	
Age > 65 years	+1	Previous DVT or PE	+1.5
Previous DVT or PE	+3	Recent surgery or immobilization	+1.5
Surgery or fracture within one month	+2	Cancer	+1
Active malignancy	+2		
Symptoms		Symptoms	
Unilateral lower limb pain	+3		
Hemoptysis	+2	Hemoptysis	+1
Clinical Signs		Clinical Signs	
Heart rate		Heart rate	
75 - 94 beats/min	+3	>100 beats/min	+1.5
≥95 beats/min	+5		
Pain on lower limb deep vein at palpitation and unilateral edema	+4	Clinical signs of DVT	+3
		Clinical Judgement	
		Alternative diagnosis less likely than PE	+3
Clinical Probability		Clinical Probability (3 levels)	
Low	0 - 3	Low	0 - 1
Intermediate	4 - 10	Intermediate	2 - 6
High	≥11	High	≥7
		Clinical Probability (2 levels)	
		PE unlikely	0 - 4
		PE likely	> 4

Results



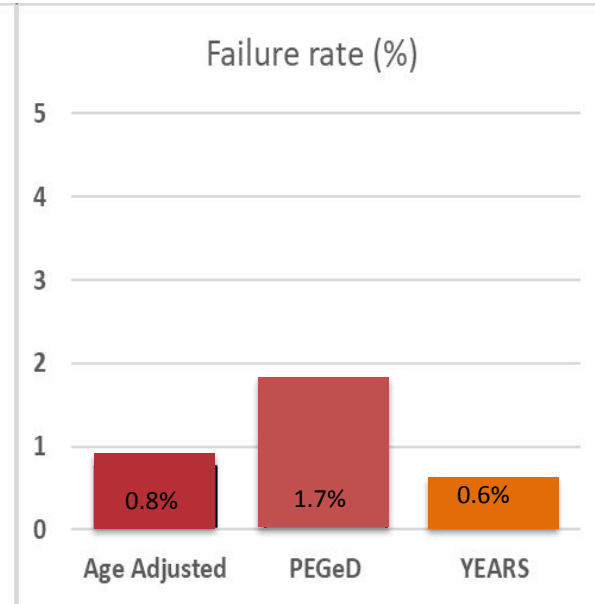
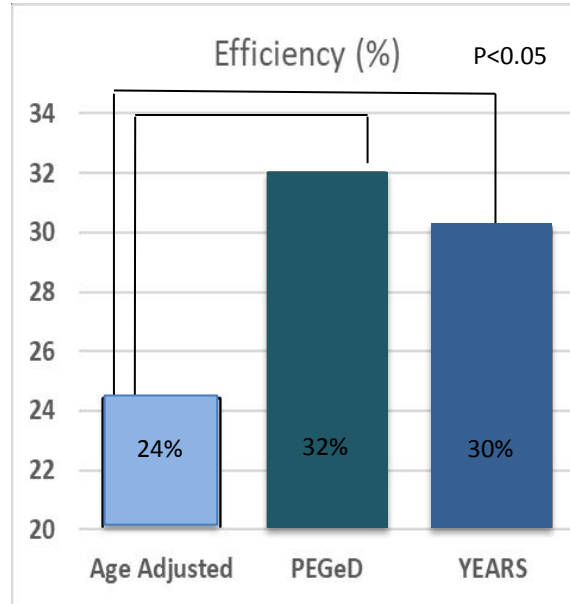
The prevalence of PE, including the 30-day follow-up, was 4.2% (95% confidence interval, CI, 2.7-6.3%).

The majority of these cases (78%) exhibited distal (segmental or subsegmental) emboli, and there were no PE-related fatalities.

Results

The 'age-adjusted' D-dimer strategy initially excluded PE in 24% of patients (95% CI, 21-28%), with a failure rate of 1% (95% CI, 0-4%).

Retrospectively applied, the 'clinical probability-adjusted' D-dimer strategies, specifically the YEARS and PEGeD algorithms, excluded PE in a significantly higher proportion (30% and 32%, respectively) compared to the 'age-adjusted' D-dimer strategy ($P < 0.05$ for both), with similar failure rates.



Discussion and Conclusions

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- Pulmonary embolism is infrequent among patients presenting to the ED with hemoptysis and carries a favorable prognosis
 - The 'clinical probability-adjusted' D-dimer strategies demonstrated significantly higher efficiency compared to the 'age-adjusted' strategy.
 - PE screening in patients with hemoptysis deserve further investigation aimed at improving the diagnostic efficiency.



**GRAZIE PER
L'ATTENZIONE**