Preemptive Anticoagulation in Acute Pulmonary Embolism: A Single Center VA System Analysis

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BACKGROUND

- Acute pulmonary embolism (PE) can be fatal, and early anticoagulation (AC) is recommended.

- AC is usually initiated after diagnosis, but clinician gestalt, pretest probability scoring, and risk/benefit analysis may prompt preemptive AC prior to further testing and definitive diagnosis.

- Clinical guidelines recommend therapeutic AC without delay when intermediate to high-risk PE is suspected.

PURPOSE

Evaluate preemptive anticoagulation in acute PE cases over a 10-year period at the Dayton VA to elucidate knowledge gaps in medical education and acute PE care.

METHODS

- Between 2013-2022, 375 cases of acute PE at the Dayton VA were identified in the VA Informatics and Computing Infrastructure and manually reviewed.

- Cases were risk stratified as low-risk (LR), intermediate low-risk (ILR), intermediate high-risk (IHR), and high-risk (HR) according to the 2019 European Society of Cardiology Acute PE guidelines.

RESULTS

Patient Characteristics	Preemptive AC N = 24 (13.3%)	AC after Diagnosis N = 144	p value
RGS, mean (SD)	6.20 (1.7)	7.11 (1.9)	p = 0.03
Age, yrs; median (IQR)	65.5 (55-75)	70 (64-76)	NS
Length of Stay, days; median (IQR)	4.5 (3-8.5)	4 (2-8)	NS
History of VTE	6 (25%)	38 (26.4%)	
PE + DVT	10 (41.6%)	64 (44.4%)	
COPD	6 (25%)	69 (48%)	
CAD	14 (58.3%)	49 (34%)	
Cardiomyopathy	4 (16.7%)	21 (14.6%)	
Cancer	3 (12.5%)	35 (24.3%)	
Covid-19	4 (16.7%)	13 (9%)	

RGS, Revised Geneva Score; VTE, venous thromboembolism

180 cases (48%) were intermediate Low/High and High-Risk acute PE. Preemptive AC occurred in **24 cases (13.3%).** For comparison to AC after diagnosis (n = 144), cases with RGS < 4 (low clinical risk), clinician concern for bleeding, and High-Risk/arrest were excluded. RGS for preemptive AC was mean (SD) 6.20 (1.7), and RGS for AC after diagnosis mean 7.11 (1.9). Time to AC after diagnosis by CTPA or V/Q was median 150 minutes (IQR 90-275). The age of veterans treated with preemptive AC was younger (Median 65.5 years, IQR 55-75, versus AC after diagnosis age 70 years, IQR 64-76), and length of stay was similar; preemptive AC median 4.5 days, IQR 3-8.5, and AC after diagnosis median 4 days, IQR 2-8.

DISCUSSION

Revised Geneva Scores (RGS) were similar in this cohort although only a low percentage of veterans received preemptive anticoagulation. Decision for AC is likely related to gestalt, confirmatory testing, and AC risk-benefit assessment. Rarely, an acute PE probability score is documented in the medical record.

FUTURE DIRECTIONS

Additional analysis of acute PE cases at Dayton VA is ongoing to identify acute PE knowledge gaps for targeted medical education efforts, and to improve the early initiation of anticoagulation and overall quality of acute PE care.

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