

Dr Oud also pointed out his concern regarding the relation between in-hospital mortality and discharge to hospice among end-stage COPD hospitalizations with and without AF. Per his recommendation, we conducted additional analysis on the trend of discharge to hospice over time in patients with end-stage COPD with and without AF. The results suggest that rate of discharge to hospice (overall, 2.98% in the AF group vs 1.73% in the non-AF group) increased significantly in both groups (1.89% to 4.35% in the AF group and 0.54% to 2.75% in the non-AF group). Further analysis found that there was no significant difference in trend of transition to hospice care between the two groups ($P = .1079$), which does not reflect a faster and greater rise over time in discharge to hospice among the AF group. Still, we can make no conclusions regarding the relation between in-hospital mortality and transition to hospice care based on the existing information.

Despite the inherent limitations of the NIS database, the strength of its large sample size and sufficient statistical power at a national level support its continued role in generating hypotheses that require future verification. Further studies are warranted to focus on the prognostic impact of prevalent vs new AF on hospitalized patients with end-stage COPD.

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Ignored Identity of Age-Dependent Increase in Pulmonary Embolism



Atrial Fibrillation

To the Editor:

We read with great interest the article published recently in *CHEST* (October 2019) by Pauley et al¹ in which their goal was to evaluate national trends in admission rates, discharge disposition, and length of stay in patients hospitalized with pulmonary embolism (PE) by assessing patient demographic and hospital characteristics. They found a continued increase in admissions for PE between 2000 and 2015. Elderly patients have been shown to be affected disproportionately and experience higher mortality rates compared with the other age groups. Increased age and comorbidity burden, including congestive heart failure, paralysis, and metastatic cancer, have been found to be independently associated with poor outcomes. The authors also noted that targeted clinical trials designed to improve survival and quality of life in all age brackets are needed.

The continuing increase in the incidence of PE is an important health issue that must be resolved. As Pauley et al¹ mentioned, this increased incidence of PE can be explained partially by the widespread availability and use of CT imaging, and partially by the increased incidence of comorbid diseases of aging such as heart failure, obesity, chronic pulmonary diseases, renal failure, hypertension, and diabetes mellitus. What we might have overlooked or ignored is the role of atrial fibrillation (AF) in the occurrence of PE. AF is found to have an overall

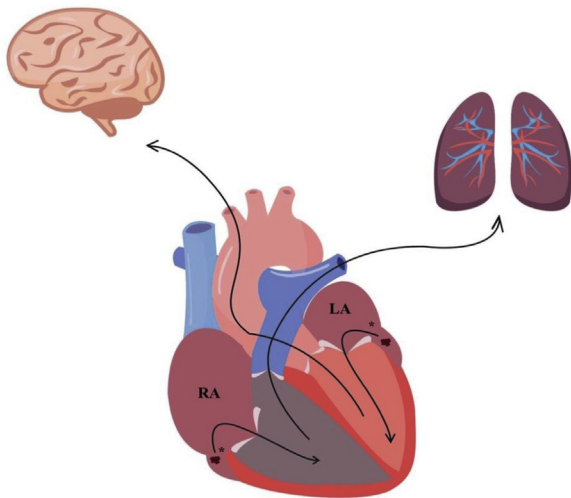


Figure 1 – Schematic illustration of left atrial thrombus causing ischemic stroke and right atrial thrombus causing pulmonary embolism. *Indicates thrombus originating from left and right atrial appendix. LA = left atrium; RA = right atrium.

prevalence of 5.5%, rising from 0.7% in the group aged 55 to 59 years, to 17.8% in those aged ≥ 85 years. The prevalence of AF increases with age, with a lifetime risk of 20% to 25% for women and men aged 55 years.² In addition to ischemic stroke being the most detrimental complication, AF is a risk factor for PE. Conventionally, PE is regarded as a complication of DVT; in almost one-half of the patients with PE, the origin of thrombi remains unknown.^{3,4} Higher prevalence of AF in patients with PE compared with a control population has also been reported.⁵ Increased regional coagulation activity of the right and left atria and systemic coagulation activity possibly play a role in both increased VTE risk and stroke risk as well in patients with AF.⁶⁻⁸ Moreover, it has been reported that CHA₂DS₂-VASc (congestive heart failure, hypertension, age ≥ 75 years, diabetes mellitus, stroke/transient ischemic attack, vascular disease, age 65-74 years, sex category) score is directly associated with the incidence of PE and has a predictive value for PE in patients with AF.⁹ The scenario of embolization of thrombi from the left atrium to cerebral circulation can be simulated in the same manner for PE from the right atrium to pulmonary artery circulation (Fig 1).

It is important to emphasize the possible contribution of AF to PE. It would also have been very valuable if the authors could have supplied the rate of AF, which also shows an age-dependent prevalence increase in parallel to PE. Targeting the presence of AF in patients with PE for whom the etiology remains unknown would further improve the clinical course of PE and would prevent future VTE events.

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Response



To the Editor:

The letter to the editor by Dr Yetkin and colleagues regarding our recent article, “Age-stratified national trends in pulmonary embolism admissions,” addresses