

Title: Prevalence of pulmonary embolism in emergency department patients with isolated syncope - The search must continue

Running Title: The search for PE prevalence in ED patients with isolated syncope

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I read with great interest, “Prevalence of pulmonary embolism in emergency department patients with isolated syncope: a prospective cohort study”, by Raynal et al [1]. The authors importantly and admirably attempt to establish the prevalence of pulmonary embolism (PE) in an emergency department (ED) population with “isolated syncope”, that is, without associated chest pain or dyspnea at the time of the syncope or during the ED visit. All enrolled patients underwent a formal evaluation, and PE was identified in 2.2% (95% CI, 1.1 to 4.3%). Acknowledging that their study was ultimately underpowered for a testing threshold of 1.85%, the authors appropriately conclude that the PE prevalence in patients with syncope is “not sufficiently low to negate the requirement for a formal work up in the ED, even in the absence of chest pain or dyspnea”. Unfortunately, such sentiment, although reasonable, may yet further contribute to the present-day scourge of indiscriminate computed tomography and its associated exposure to radiation, identification of incidental findings, and potential diagnosis of subsegmental PE for which treatment is controversial.

There are a few methodological issues with the selection of participants that may have impacted the results and may influence future research on this important subject. First, Raynal et al [1] used review of systems to identify and exclude patients. This method relies on individual patient perception and may be confounded by the presence of other symptoms (i.e. fatigue, depression, or anxiety) [2]. American Thoracic Society guidelines [2] recommend that researchers use an instrument that measures dyspnea and is accurately described in the methods. Second, the clinical presentation of PE can range from minimal symptoms to sudden cardiovascular collapse and is “heterochronic” [3]: Successive emboli may occur over time leading to more progressive symptoms over days to weeks, rather than acute chest pain or dyspnea. An analysis [4] of PIONEER II [5] reported that 16% of patients with PE presented with *exertional* dyspnea only, and 19% presented with onset of dyspnea *over days*. Therefore, by failing to exclude patients with exertional dyspnea and subacute symptoms, the results of Raynal et al [1] may not be representative of PE prevalence in a population with truly “isolated” syncope.

In conclusion, future studies on this topic should consider using a stricter definition of isolated syncope: syncope without chest pain or dyspnea at rest *or during exertion over a prespecified number of days prior to the ED visit*. Prospective study of a more exclusive, isolated syncope cohort may establish PE prevalence that is indeed low enough (i.e. < 1.85% [1]) to forgo further testing. Such a study should exclude participants with chest pain or dyspnea that 1) occurs at rest or during exertion and 2) may be acute or subacute (onset over days).

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