

## **VMR Teaching Points: *Pleural Effusions in Pulmonary Embolism***

The following teaching points are taken from a study comparing 127 patients with CT-diagnosed PE + effusion, and 651 CT-diagnosed PEs without effusion, after excluding patients with major comorbid causes of effusion (eg malignancy).

Despite having a relationship with higher rates of hTN, high-risk sPESI, & RV dilation, **the presence of effusion was not a predictor of in-hospital mortality, adverse outcomes, and length-of-stay** on multivariate analysis.

**Hemoptysis & pleuritic pain suggestive of infarction were more frequent in patients with effusions** (11% vs. 2.5% for hemoptysis), and **the presence of infarction** (defined as presence of a peripheral consolidation in the region of a [sub]segmental PE) **was more commonly found in patients with effusions** (~40% vs. ~8%).

On multivariate analysis, **infarction** (OR 6.20, 95%CI 3.49-10.91) & **CRP levels** (OR 1.05, 95%CI 1.101-1.09) **were independent predictors of effusions due to PE.**

**92% of patients who got tapped had exudative effusions.** The proposed mechanism: inflammatory mediators released from platelet-rich emboli → ↑ permeability of pulmonary capillaries → ↑ interstitial fluid passing through visceral pleura → effusion. Also, ischemia of capillaries distal to emboli may also ↑ permeability. Interestingly, such inflammation may explain the higher median ESR/CRP levels seen in this study's effusion patients.

Who gets infarction? Classically, those with small peripheral emboli. However, in this study, central PE was more common in the effusion group (with higher incidence of infarction) than the non-effusion group. Authors explained this with the finding that most with central PE also had peripheral emboli, and therefore had higher clot burden

**Reference:** Choi SH, Cha SI, Shin KM, Lim JK, Yoo SS, Lee SY, Lee J, Kim CH, Park JY, Lee DH. Clinical Relevance of Pleural Effusion in Patients with Pulmonary Embolism. *Respiration*. 2017;93(4):271-278. doi: 10.1159/000457132. Epub 2017 Feb 15. PMID: 28196360.