European Respiratory Society
Annual Congress 2012

Abstract Number: 3284

Publication Number: P1501

Abstract Group: 4.3. Pulmonary Circulation and Pulmonary Vascular Disease

Keyword 1: Embolism **Keyword 2:** Biomarkers **Keyword 3:** Pulmonary hypertension

Title: Red cell distribution width (RDW): A new predictor for chronic thromboembolic pulmonary hypertension

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Body: The most important long-term complication of pulmonary thromboembolism (PTE) is chronic thromboembolic pulmonary hypertension (CTEPH) associated with considerable morbidity and mortality.It is uncertain why some patients with acute pulmonary embolism develop CTEPH and others do not.Elevated red blood cell distribution width (RDW) has been associated with adverse outcomes of heart failure,pulmonary embolism and idiopathic pulmonary hypertension.Our aim is to investigate whether RDW might be a predictor of CTEPH in pulmonary embolism patients or not.This study is retrospective cohort study.A total of 203 consecutive patients with acute PE were included. Minimum follow-up period was 10 months.We collected each patient's baseline characteristics including RDW,Troponin-T and CRP.Receiver operating characteristic (ROC) analysis was performed to determine the optimal RDW cut-off levels to predict CTEPH. CTEPH frequency in PE patients(n=203) was 7.9% (n=16). RDW was higher in CTEPH patients than the patients without CTEPH (17.04±3.46; 14.64±1.82)(p=0.015).The optimal cutoff value of RDW for predicting CTEPH 14.65.The area under the curve of RDW for prediction of CTEPH was 0.735 (CI: 0.600-0.869) ;In cases with RDW levels >14.65, the specificity and sensitivity for CTEPH were 62% and 75%, respectively.Negative predictive value of RDW at cutoff 14.65 for CTEPH was 96.7%. At multivariate regression analysis,RDW, hazard ratio: 1.58 (95% confidence interval: 1.09-2.30) was predictor of CTEPH (p=0.016).High RDW levels was an independent predictor of CTEPH in PE patients.Therefore, RDW levels may provide a potential marker to predict CTEPH in PE patients.