Acute pulmonary embolism on MDCT of the chest: prediction of cor pulmonale and short-term patient survival from morphologic embolus burden.

OBJECTIVE: To predict cor pulmonale and short-term outcome in patients with pulmonary embolism (PE), we retrospectively investigated three morphology-based MDCT systems for scoring pulmonary artery obstruction.

MATERIALS AND METHODS: Eighty-nine consecutive patients (51 men and 38 women; age range, 23-83 years; median, 63.3 years) with an MDCT diagnosis of acute PE were included in the study. Sixty-four patients had a coexisting malignancy. PE severity was assessed by two masked observers using three percentage arterial obstruction indexes: two severity scores adapted from conventional angiography (excluding and including arterial branch obstruction grading: scores A and B, respectively) and a CT-derived severity score (index C). Echocardiographic reports were reviewed for elevation of right ventricular pressure. Obstruction index results were analyzed for correlation with pulmonary artery pressures and for prediction of cor pulmonale and 30-day survival. Statistical analysis included kappa, analysis of variance, linear correlation, chi-square, and logistic regression tests. RESULTS: Kappa values of 0.89, 0.82, and 0.78 were obtained for interobserver agreement on PE severity for indexes A, B, and C, respectively. PE severity was moderate but varied significantly between the scores (for index A: median, 25.0%; range, 6.3-100; for index B: median, 12.5%; range,
3.1-65.6; for index C: median, 7.1%; range, 0.65-65.8; p 0.05). With score C, PE severity was a significant predictor of early death (p = 0.018; OR, 1.03/percentage increase [95% confidence interval, 1.00-1.06]; for an index C cutoff of 21.3%: p = 0.018; overall OR, 6.77; positive predictive value, 0.24; negative predictive value, 0.96). CONCLUSION: Mastora score was a significant predictor of cor pulmonale and short-term outcome and may therefore allow therapy and risk stratification in patients with acute PE.