risk APE. Thirty-day APE related mortality was 10,5% (8 pts) and all-cause mortality was 13% (10 pts). In ROC analysis APE related mortality of TAPSE was higher (p<0,00001) (0,905, 95% CI: 0,828 to 0,983) than AUC of echo RV/LV ratio (0,427, 95% CI: 0,183 to 0,672) and MDCT RV/LV ratio (0,371, 95% CI: 0,145 to 0,598). At univariable and multivariable Cox analysis, TAPSE was the only significant mortality predictor with HR 0,73 (95% CI: 0,62 to 0,87, p=0,0004) and (HR: 0.73, 95% CI: 0.62 to 0.87; p=0.0003) respectively, while RV/LV ratio at echo or MSCT were nonsignificant. TAPSE ≤15 mm was a significant predictor of APE related mortality with HR: 26,2, 95% CI: 3,2 to 214,1; p=0,002, with PPV of 44% and NPV 98%. TAPSE ≥18 mm had a PPV 25,8% with a 100% NPV. All patients with TAPSE ≥18 were in low –risk group with good prognosis.
Conclusions: TAPSE, easily measurable echocardiographic parameter is preferable to echo and MDCT RV/LV ratio for risk stratification in initially normotensive patients with APE. TAPSE ≤15 mm identifies patients with an increased risk of 30-day APE-related mortality.

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Efficacy and safety of novel oral anticoagulants in patients with pulmonary embolism: a systematic review and meta-analysis

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Purpose: Novel oral anticoagulants (NOACs) have been shown to be as effective as conventional anticoagulation for the prevention of recurrences in patients with venous thromboembolism (VTE). Whether their effect is confirmed in patients presenting with acute pulmonary embolism (PE) is unknown.
Methods: We performed a systematic review and a meta-analysis of phase III randomized controlled trials aimed at assessing the efficacy and safety of NOACs in patients with acute PE. MEDLINE, EMBASE and CENTRAL were searched up to December 2013 without restrictions. The primary outcome of the analysis was recurrent VTE. Other outcomes were major bleeding (MB) and the composite of major or clinically relevant non major bleeding (CRB: clinically relevant bleeding). Data were pooled and compared by ORs and 95% CIs.
Results: Overall, 6 studies (2 rivaroxaban, 2 dabigatran, 1 apixaban, 1 edoxaban; 26872 patients) comparing NOACs with conventional anticoagulation (low-molecular weight heparin followed by vitamin K antagonists) for treatment of VTE were included. VTE recurrence occurred in 2.6% and in 2.8% of patients treated with NOACs and conventional treatment respectively (OR fixed 0.92, 95% CI 0.79-1.06; I-squared 0%). Bleedings were less frequent in patients receiving NOACs respect to conventional treatment in terms of both major bleeding (OR random 0.61, 95% CI 0.44-0.85; I-squared 53%) and CRB (OR random 0.70, 95% CI 0.54-0.91; I-squared 87%). Five studies (11539 patients) reported on separate data in patients presenting with acute PE: VTE recurrence occurred in 2.4% and 2.6% patients treated with NOACs and conventional anticoagulation, respectively (OR fixed 0.89, 95% CI 0.7-1.12; I-squared 0%). CRB occurred in 8.4% and in 9.8% patients with acute PE treated with NOACs and conventional anticoagulant, respectively (OR random 0.73, 95% CI 0.48-1.09; I-squared 81%). Data were confirmed after heterogeneity was solved.
Conclusions: NOACs are as effective as and probably safer than conventional anticoagulant treatment when given in patients with acute PE for prevention of recurrent VTE.

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Low dose prolonged infusion of tissue type plasminogen activator therapy in massive pulmonary embolism

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Aims: Pulmonary embolism (PE) is life threatening disease requiring early diagnosis and treatment. The aim of the present study was to assess the effects of low-dose (25mg) prolonged administration (in 6 hours) of tissue type plasminogen activator (tPA) on in-hospital mortality and outcomes in patients with massive PE.
Methods: A total of 27 consecutive patients with massive PE were included in this study. The primary end points consisted of in hospital all cause mortality, major complications, pulmonary hypertension and right ventricular dysfunction. Secondary points are all cause mortality, pulmonary hypertension and right ventricular dysfunction at 6 month. This study is registered to Clinical Trials with the number NCT02029456.
Results: The mean age of the patients was 66.19±15.72 and 14 of the 27 patients were older than 70 year. Echocardiographic outcomes of the patients are demonstrated in Table-1.The mean pulmonary artery systolic pressure (PASP), tricuspid annular plane systolic excursion (TAPSE), right atrium/left atrium (RA/LA) diameter and right ventricle/left ventricle (RV/LV) diameter were significantly decreased after TT. The myocardial preformance index (MPI) and s' were significantly increased after the TT. No major bleeding was observed. None of the patients had stroke, transient ischemic attack or cardiopulmonary arrest during hospitalization. Over all none of the patients died in the hospital or during follow up. Pulmonary hypertension was not developed during follow up. All patients reached primary and secondary outcomes.

Variable	On admission	Post-TT	Pre-discharge	6 month
PABS, mmHg	56.70±7.96	33.78±2.80	30.85±3.41	29.22±3.08
TAPSE, cm	1.47±0.36	2.10±0.29	2.19±0.24	2.23±0.23
MPI	0.47±0.09	0.56±0.072	0.60±0.043	0.62±0.035
S', cm/sec	0.94±0.31	1.52±0.27	1.57±0.23	1.63±0.22
RA/LA	1.54±0.25	1.13±0.15	1.04±0.12	0.95±0.12
RV/LV	1.13±0.13	0.97±0.12	0.85±0.11	0.75±0.11
IVC, mm	25.93±3.11	21.04±2.99	18.81±2.57	17.89±2.90

Conclusion: Low dose prolonged infusion of tPA is an effective and safe therapy in patients with massive PE. This protocol is also effective in decreasing PASP and restoration of RV functions.

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Prognostic value of reflux of contrast into the inferior vena cava or hepatic veins in acute pulmonary embolism

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Purpose: Computed tomography pulmonary angiography (CTPA) is routinely used to diagnose pulmonary embolism (PE). Reflux of contrast medium into the inferior vena cava or hepatic veins (IVC) as shown by CTPA is a simple sign that could help for PE risk stratification. The purpose of this study was therefore to investigate prognosis significance of contrast reflux into IVC in acute PE.
Methods: 141 consecutive patients with acute PE confirmed by CTPA were included between March 2010 and February 2013. Degree of reflux into the IVC and the hepatic veins was graded from 1 (none) to 6 (severe) by two independent observers, blinded to each other. The presence of reflux in IVC was compared with clinical parameters used in the most recent European Society of Cardiology (ESC) guidelines for risk stratification: electrocardiographic signs (negative anterior T waves in particular), cardiac biomarkers: Troponine Ic (normal value <0.06 ng/ml) and BNP (normal value <100 pg/ml) and echographic data (right ventricular systolic dysfunction (TAPSE <17mm and S'<10 cm/s) and right ventricular dilatation (RV/LV >0.9)). Composite endpoint was 30-day mortality or clinical deterioration requiring treatment escalation defined as catecholamine infusion, need for thrombolytic treatment or cardiopulmonary resuscitation.
Results: The composite end-point was observed in 5% (n=7) with a 30-day mortality rate of 2.1% (n=3). Heart rate >110 bpm (odds ratio (OR) 5.6, 95% CI, 1.03-30), the presence of atrial fibrillation (OR 6.3, 95% CI, 1.05-37.7), negative anterior T waves (OR 6.1, 95% CI, 1.3-29.1), elevated Troponin Ic (OR 5.4, 95% CI, 1.1-25.8), elevated BNP (OR 11.5, 95% CI, 1.3-98.2), right ventricular dysfunction (OR 5.3, 95% CI, 1.1-25.1) were predictors of death or clinical deterioration. Contrast reflux into IVC from grade 4 to 6 was observed in 17% of patients (n=24). Inter-observer agreement was excellent (Lin's concordance correlation coefficient was 0.91). Grade 4 reflux or greater was a strong predictor of death or clinical deterioration (OR 15.1, 95% CI, 2.8-83.7). Contrast reflux ≥ grade 4 had a 86% specificity and a 71% sensitivity to predict adverse outcomes (area under curve: 0.88).
Conclusion: A grade 4 or higher contrast reflux into the IVC is a simple and frequent CTPA sign, highly predictive of adverse outcomes in patients with PE.

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Always look at the parenchyma images: the prognostic impact of pulmonary opacities or consolidation areas in acute pulmonary embolism

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Introduction: Whether (i) the localization of thrombi in the pulmonary arterial tree and (ii) the presence of pulmonary opacities or consolidation areas (PO/CA) in the pulmonary parenchyma have a role in risk stratification in APE has not yet been established. We aimed to evaluate the impact on all cause 30 day mortality of both the aforementioned imaging criteria as assessed by MDCT in patients with APE.
Methods: Retrospective, observational study including all patients with MDCT detected APE during a two-year period. The primary endpoint was 30 days all-cause mortality. Patients were divided into the following groups according to the localization of pulmonary thrombi: 1) pulmonary trunk or pulmonary main arteries (PT/PM) 2) lobar pulmonary arteries (L) 3) segmental pulmonary arteries (S) 4) subsegmental pulmonar arteries (SS). We also divided patients according to the presence or absence of PO/CA. Pulmonary parenchymal lesions or nodular areas with suggestive malignant characteristics were not included in this group. We performed a logistic regression model to assess whether the localization of thrombi and the presence of PO/CA significantly predicted 30 day mortality.
Results: Between 01/2010 and 12/2011, 528 patients were diagnosed with APE by MDCT (247 males, mean age 72 years). A total of 517 patients had reliable imagiological data enabling to localize the pulmonary thrombi; of these, 38,9% had thrombi in the PT/PM; on 25,3% the largest arteries affected were the L; S were the largest arteries affected in 25,7%; less than 7,7% had thrombi only on SS. Importantly, there was no difference in 30 day mortality among these